JAN 28 '28

Veterinary Medicine

VOL. ~~XXIV~~ XXIII FEBRUARY, 1928 No. 2

Published Monthly by the Veterinary Magazine Corporation
4753 South Parkway, Chicago, Ill., U. S. A.
$4.00 a Year
Entered as second-class matter, July 19, 1910, at Chicago, Ill., under Act of Congress of March 3, 1873
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I know the American army meat inspection policy, and can say that from the point of view of meat inspection, it is the best protected army in the world.—Major-General Sir John Moore.

The U. S. Biological Survey uses small quantities of catnip oil as a lure for trapping mountain lions and bobcats in the war on predatory animals in the western range states.

Ultraviolet irradiation is of some benefit in cases of canine demodectic mange, probably because of the general stimulative effects that improves the general condition of the infested animal.

Tetrachlorethelene, according to reports from different sections of the country, is an efficient agent in the control and treatment of sheep and goats infested with stomach worms. This drug is easily administered in capsules.

The usually so-called cull lambs that occur in the market in the fall are culls because of the fact that they have not been properly cared for. Such culls usually can be fed out profitably.

Post operative pulmonary embolism, particularly in the human, is a factor that should not be overlooked. Thus, it has been found in one large clinic, that approximately 6 per cent of the operative cases that have been autopsied was affected with pulmonary embolism. This post operative condition is more common in overweight aged patients.

The loss to industry alone from poorly-treated and maltreated fractures is estimated at millions of dollars annually.—Jour. A. M. A.

Seven fatal and 75 non-fatal cases of anthrax occurred, chiefly among factory workers, in Pennsylvania, during the five-year period 1922-26.

From 1501 to 1600 A. D. the average life span of man was 21 years, now it is 59 years. Progress in the science of medicine is mainly accountable for the increase which is expected to continue, according to the Surgeon General of the U. S. Public Health Service.

Paris green mixed with moist sand in the proportion of 1 to 100 is an effective poison for both surface feeding and subsurface feeding larvae of mosquitos; destroying in a number of carefully conducted tests, upwards of 98 per cent of the larvae within two hours.

The gain in expectancy of life is almost entirely due to the saving of lives under thirty-five and by infant welfare work. At the ages of 45 to 50 there are 4 more deaths per thousand than twenty years ago; at 50 to 55, there are 6 more; and at 55 to 60 there are 8 more. Whether or not the average length of life shall continue to rise will be determined by how much each person will permit science, education and religion to influence his habits, control his desires and direct his affairs.—J. H. Beard, Univ. of Illinois.

Recovery from a primary coccidial infection of animals, particularly cats, according to Andrews, produces an immunity for several months and perhaps for life. (Trop. Vet. Bul. 15, 3.)

In four states the public health service has control of rabies in dogs; in 39 states, dogs are considered animals and control of rabies is invested in the live stock commission; five states have no control measures, leaving the matter to municipalities or other political subdivisions.

Vaccination for the prevention of rabies is extensively practiced in the United States. The single method is generally used. The majority of the live stock sanitary officials consider it of some value in the control of rabies. Few, however, believe it safe to substitute vaccination for quarantine.

The intravenous injection of three doses at from one to five-day intervals, of .003 to .004 gram of sodium antimony tartrate per kilogram body weight, will at least in some instances, destroy the filaria immitis in the circulating blood of the dog, but will not destroy those parasites in the heart. Care should be exercised in the use of this drug as it is quite toxic. (Trop. Vet. Bul. 15-3.)

As a means of identifying the original ownership of hogs on the killing floor and to avoid the necessity of killing each load separately, the committee having in charge the administration of our work have voted that on and after January 1, 1928, all hogs from accredited counties on which the ten-cent premium is desired must be tattooed before shipment. The tattoo marker is an instrument with letters and numbers made of phonograph needles. By means of a paint brush, a mixture of carbon and oil is spread over these digits and the hog is slapped on the back of the neck where these marks do no harm to the carcass.—H. R. Smith, Live Stock Commissioner, Chicago.

At New York City all freight live poultry unloaded and most of the express live poultry received is inspected for condition of health and for over-cropping. This work requires the services of a supervisor and 15 inspectors, is carried on in cooperation with the live poultry trade, and is supported entirely by the fees collected for the service. The actual inspection is done by men licensed and supervised by the Department of Agriculture.

A program of increased service to the poultry and egg industry, the most widely diffused agricultural activity in the United States, has been initiated by the Bureau of Agricultural Economics. A committee within the U. S. Department of Agriculture will collect basic statistics regarding the laying stocks on hand, hatching, young stock on farms and receipts at country concentration points.

The national House of Representatives has adopted a joint resolution providing that the word "livestock" as used in the Act of May 29, 1884, shall be construed to include "live poultry." This is the law that authorizes the Secretary of Agriculture to establish quarantines to prevent the spread of disease among livestock and now brings live poultry under the provisions of that act.

"The mixing of serum and virus does not result in the attenuation of the virus. The suitability of such mixtures for active immunization requires an adequate dosage of serum and the presence of virulent virus."—Roderick & Schalk. Bul. 210, Exp. Stat., N. Dak.

If we admit the efficacy and practicability of the Bang system of handling tuberculosis of cattle, and experience neither here nor in Europe justifies such admission, the fact remains that the method is still uneconomical, in any but herds of extraordinary breeding value. In this country, there is no market, except a surreptitious one, for the milk or milk products of known tuberculosis cows;

and to keep a herd for six years or longer for only the calves produced is, in most cases, extremely wasteful.

HOW DO YOU SPEND YOUR TIME

Many of our hours are mortgaged to duty, so that we have no latitude in deciding how we will spend them. We and our families must be fed, clothed and sheltered and a considerable part of our time has to be spent in procuring these things, but we all have minutes and hours which are our own, and the way we spend these will largely determine our future.

Nor are our discriminatory faculties wholly limited to the hours over which we have entire control. The hours of duty may be used to the best advantage or they may fall short of being so used. Remember the story of the three workmen, one of whom was merely cutting stone, the second was working for ten dollars a day, while the third was building a cathedral. Which are we doing? That is not an academic question but one which is of vital importance to every one of us, because anyone who knows the answer can tell, with astonishing accuracy, where we will be ten years hence.

Bearing in mind the power of habit, it is easy to see that the way we do our work or spend our time and money today will have an enormous influence in determining the way we will be doing these things a year or five years hence. That is the reason for the statement that even the trivial happenings of today were determined long ago, by the habit of mind and thought of the man to whom the things happen. Broadly and humanly speaking, that is the only predestination, but upon that basis it works, with a regularity and certainty which would be very surprising to many who have not given the matter much thought.

There is only one safe way to do our duties, and that is as if our boss—for we all have one, in one shape or another—were coming around at once to look over our work and see if it is satisfactory.

The ways of spending the time which is our own are, on the contrary, as various as the men who spend it. Nobody is going to check up on that today, but there is one to whom we will have to give an accounting of our stewardship, and that is the man we will be—or might have been—ten years hence. He it is who will view our labors with a cool and unprejudiced eye and say, "You made me what I am today, I hope you're satisfied."

Every moment of every day we are, consciously or unconsciously, making decisions. If we make them unconsciously we are in almost as bad a case as a man who is trying to sail a ship without a rudder. If we fully recognize what we are doing we are more likely to make sound decisions and to get, for the money and the time which we have to spend, something which will prove to be a really profitable investment.

I cannot tell you how you ought to spend your time, nor can you tell me. No man can do that for another. All one can do is to point out the situation and earnestly urge that each one shall lay out a systematic plan of spending—a budget—and travel each day with some definite goal in view.

So it seems that the mystic is right, because the way in which we exercise the faculty of discrimination enables a thoughtful observer to tell, not only what we are today, but what we were years ago and what we will be years hence.

No faculty is developed without patient, unremitting, daily exercise and if we would gain a just appreciation of the relative values of all things—tangible and intangible—we cannot begin the development of that faculty too soon, for every day lost now means the positive and certain postponement of the time of our arrival at that position in the scheme of things which we would like to attain.—Clinical Medicine.

Practicing veterinarians that are capable, honest and give prompt service should have no fear that the future will bring a lessened demand for their services.

YIELDS FIGHT ON TUBERCULOSIS

As announced last month, Dr. J. A. Kiernan, Chief of the Tuberculosis Eradication Division of the Federal Bureau of Animal Industry, died December 13, 1927, after an illness of several weeks, beginning with an attack of influenza. Cardiac complications were the immediate cause of death.

Doctor Kiernan was born in Jersey City, N. J., July 27, 1873, graduated from the

John Andrew Kiernan
1873-1927

New York College of Veterinary Surgeons in 1895, practiced for 18 months and entered the Bureau of Animal Industry in November, 1896.

Like most veterinarians in the Bureau, Doctor Kiernan's early experience was in meat inspection. The foot-and-mouth disease outbreak in New England in 1902 afforded the first opportunity for the display of his remarkable ability for succeeding in public contacts. Never again did he return to meat inspection. From 1902 to the date of his death, Doctor Kiernan constantly occupied positions where his dealings were largely with livestock owners and in his ability to succeed in this line of work the veterinary profession has not yet developed his peer.

Following the eradication of foot-and-mouth disease in 1902, Doctor Kiernan was assigned to the work of cattle scabies eradication, first at Salt Lake City and later at Aberdeen, South Dakota. He was one of the first to be placed in charge of a station when tick eradication was undertaken and was in charge of this work successively in North Carolina, Virginia, Tennessee, Alabama and Mississippi; continuing in tick eradication until made chief of the Tuberculosis Eradication Division of the Bureau of Animal Industry at the time this division was organized in 1917.

Although Doctor Kiernan was becoming widely known as a result of his brilliant work in tick eradication, it was not until the foot and mouth disease conference in Chicago in November, 1915, that he can be said to have become a national figure among veterinarians and other livestock sanitarians. His address at that conference definitely placed him nationally. His splendid achievements subsequently were expected from the promise he showed at that time.

Concerning this speech, VETERINARY MEDICINE in reporting the meeting (January, 1916) said:

"United States congressmen, state senators, judges, lawyers, railroad traffic agents, veterinarians and breeders in large numbers made speeches from the floor, but notwithstanding the eminence of many of the speakers, it was left for a veterinarian to make the most logical, forceful, telling and judged by its oratorical qualities, the most splendid speech of the whole conference—the extemporaneous address of Dr. J. A. Kiernan of Alabama, on the need for cooperation between the farmers and the officials engaged in cleaning up infected districts."

Doctor Kiernan didn't speak quite so well in later years, his voice was not so clear or so pleasing in quality, added responsibilities brought with them a conservatism and the fire and enthusiasm seemed somewhat cooled as compared with the effort re-

ferred to above, but even then he remained one of the most effective speakers before any veterinary convention, his logic was unassailable, his earnestness unquestioned, and his presentation commanded attention. His marked ability as a platform speaker was a tremendous asset in all his work, which was invariably carried on in conjunction with an effective educational campaign.

Of his work as head of the tuberculosis eradication campaign, little need be said. Its main features are known to every veterinarian. In undertaking this work, he said at a meeting of the U. S. Live Stock Sanitary Association in Chicago in 1917:

"Tuberculosis is an economic problem which may be solved by every live stock owner. . . .

"Tuberculosis can be eradicated from all the cattle and all the swine in the United States. To support such a broad assertion there is abundance of evidence obtained through schools of experience, covering a period of several years. . . .

"The American people can eradicate tuberculosis, or prevent its eradication, or increase its presence. Whenever the people of a country decide to get rid of all the tuberculosis among cattle and swine, they can accomplish that work in a comparatively short time at a moderate cost. . . .

"It is believed that with such a campaign (indemnifying owners of reacting cattle) an entire state of 50,000 square miles may be cleaned in ten years at an approximate cost to the Federal government of $2,000,000.

"Mississippi, the first state to complete the eradication of the tick, didn't talk them to death, but dipped the cows in her 5,000 concrete dipping vats; the educational campaign in Mississippi did not consist of words but deeds, not lectures, but dipping vats. . . .

"There are absolutely no grounds upon which a reasonable estimate can be made of the number of years it will take to eradicate this disease. All one can do is to make a guess as to the time; and, it is my belief that if this nation succeeds in eradicating tuberculosis in fifty years, it will be one of the greatest heritages our successors will have handed down to them."

In one-fifth of the fifty years he allotted for the work, more than 42,000,000 cattle were tested and more than a million reactors removed from the dairy herds of this country. Beginning with $75,000 for the first year, the public support of this work had increased to $18,000,000 last year. Other departments of the Bureau deal with limited groups, the meat inspectors with the packers, the tick and scabies eradication with railroads and live stock raisers in restricted areas, the serum-virus control with a few laboratories, but Doctor Kiernan dealt with the whole cattle and to a less extent, the swine and poultry industries. His work came to be better known to the public than all the rest of the Bureau of Animal Industry or any other part of the Department of Agriculture, save only the Weather Bureau.

If Doctor Kiernan owed his remarkable success in tuberculosis eradication to any one quality more than any other, it was to keeping his feet on the ground, to seeing the problem before him in its true light. He was unswerving in his attack on tuberculosis of animals as an economic problem. There is hardly another leader in this work but has at one time or another shown evidences of being sidetracked onto public health phases of the work. Doctor Kiernan steadfastly maintained that the eradication of tuberculosis from cattle and swine is amply justified on economic grounds and that the advantages to the public health, large as they are, and he never minimized them, were just so much clear gain. He realized the live stock industry was not convinced of the importance of bovine tuberculosis to public health and was in no frame of mind to make large voluntary sacrifices to that end. Furthermore, congressional support which was indispensable was given for economic reasons. It is now generally recognized that but for the constant stressing of its economic advantages, tuberculosis eradication would have failed to receive the hearty cooperation of the live stock industry

that it has, and would have failed of accomplishment.

Doctor Kiernan led an active, useful life, crowded with achievements of a high order. That he was not spared for another fifteen years of service to his country is its loss and a large one. His services reflected credit on the organization of which he was a part and on the profession to which he belonged; they were of incalculable value to the live stock industry and the whole people is healthier and happier for his having lived. He leaves a widow and three sons and a host of friends, for the circle of his acquaintances was nation wide and his friends as extensive, who mourn his untimely death.

TULARAEMIA

Tularaemia has within a very few years come to be recognized as a disease transmissible from animals to man and therefore to a degree a public health problem which concerns veterinarians. The great natural reservoir of tularaemia infection is the wild rabbit but domesticated rabbits and some of the smaller rodents are susceptible to the infection.

Being a new disease, it is thought that it is more prevalent than reported cases indicate. That is, that it is more or less frequently wrongly diagnosed as typhoid fever, intestinal influenza, etc. Nevertheless, 420 cases have been positively diagnosed in man. They have been reported from all the states except New England, New York, New Jersey and Wisconsin.

Infection has occurred from three sources—dressing wild rabbits, jack rabbits, cottontail and snow shoe; tick bite, and fly bite, largely the horse fly (*Chrysops discalis*). It is necessary for the tick (*Dermacentor andersoni*) or fly to have bitten an affected animal to convey the disease.

An investigation of rabbits offered for sale in Washington, D. C., revealed 1% of them infected with virulent *Bacterium tularense* organisms. Of 22 cases occurring in man in Washington, D. C., all had a history of association with rabbits. 17 had dressed wild rabbits, bought or sold in the market; 4 had dressed rabbits shot nearby and one had dressed a rabbit which he had killed with a club.

At one stage in the disease, the rabbit is clinically sick and easily caught by dogs or cats or even by a person. Hunters and others should beware of rabbits that make little attempt to escape them.

The lesions of tularaemia in the rabbit are readily recognized on autopsy; both the liver and spleen being studded over the surface with areas of focal necrosis varying in size from that of a pin-point to one-sixteenth inch in diameter. A differential diagnosis in man is made by serological tests.

LEANING AGAINST A TREE OR SITTING CROSS-LEGGED

To the Editor:—Can you advise whether there is some way whereby one may determine when a dead animal has been killed by lightning? Will the blood congest about the injured parts of an animal killed by lightning?

L. S. Treadwell, New York.

Answer.—Judging from observations on man, animals killed by lightning may show a great variety of external lesions. It is also possible in some cases that no lesions can be found. Punctiform bluish or redish spots would be produced by the outflowing current, and numerous fine extravasations of blood might occur with burns of varying degrees and more or less elaborate surface markings in the form of fine irregular zigzag lines and feathery tracings. If the animal was leaning against a tree or a house, the lightning might enter at the point of contact, and in that case there might be a marked burning with extravasation of blood and injection of the blood vessels at the point of entrance, and punctiform hemorrhages and burns at the points of exit. Of possible internal lesions may be mentioned broken bones, ruptured blood vessels, and ruptures of abdominal organs.—Jour. A. M. A., Oct. 15, 1927.

A Week of Tough Practice

By E. T. BAKER, Moscow, Idaho

Did you ever have a week or two of practice where a bunch of difficult, discouraging cases followed one another in regular succession? The harder you work the faster they die, and you feel like the father when the nurse announced the advent of triplets:

"Really," he said, "I can hardly believe my own census!"

We had the wettest autumn in 1927 ever known in the Northwest. Rain began falling August 28th, and for the next three months we had barely two weeks of fair weather. A lot of grain was spoiled, and the ranchers had a mighty disagreeable harvest. Mix up moldy grain, hay and straw, frosted alfalfa, muddy roads, very little sunshine, and you have as a result a lot of mean cases to handle.

Nothing Much the Matter, Except—

About five o'clock one rainy (as usual) Monday morning, a rancher called up and said he had a cow trying to calve. This noble, horny-handed son of toil lived on one of the worst clay roads in the country, up through a field, and I had two gates to open in the chilly dawn. As the devout Moslem begins the day with prayer, so did we.

We found a ten-year-old Jersey cow lying down in a small stall, looking as though she had received bad news from home. The rancher soon appeared with about a quart of lukewarm water, and a lantern that was as good as the average lantern whose chimney hasn't been cleaned since the war.

Experience has taught us that dystocia cases are easier to handle in Jerseys than any other breed. Holsteins are the hardest, especially in small heifers with their first calves.

We found the calf with its head turned back, and finally located one foot, and then the other. A live heifer calf was delivered without much trouble, and no attempt was made at the time to remove the afterbirth.

However, the cow had an all-gone appearance, and I advised the owner to keep her warm, with the hind parts elevated, and with plenty of bedding.

As the rain ceased about nine o'clock, the owner hauled a load of straw, and while he was gone the cow got up, wandered around the stable until she found the filthiest part of the barn and then lay down. When found she had a complete eversion of the uterus.

We returned, replaced the eversion, and gave her a milk fever treatment. The next morning she ate some green corn, but later lay down. We were called again and found symptoms of impaction of the rumen, pneumonia, milk fever and general collapse. Outside of this she seemed all right.

To make a long story shorter, she died Tuesday night. As the negro applicant for life insurance answered the examiner when asked what caused his father's death, he replied:

"Dunno, but it wasn't nuthin' serious."

We lose just enough of these cases to make us think there may be something about veterinary science we do not know.

Founder in a Heifer

Monday afternoon we received a hurry-up call to see a pure-bred Shorthorn heifer, about nine months of age. She had filled up on apples, green corn, over-ripe prunes, turnips, part of a sack of wheat, and, for dessert, a peck of moldy peas.

This had happened on Sunday, and the owner had given her soda and salt, with some sweet cream. As she got well no faster, as he expressed it, we were called as a last resort.

In these cases of founder, acute indigestion and tympanites, complicated with

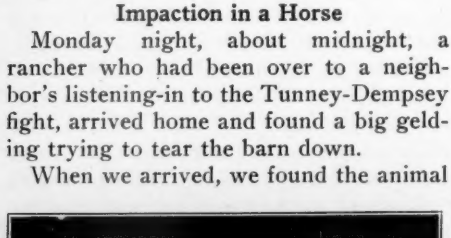
home treatment, we like plenty of oil, with intestinal antiseptics, such as mucoseptone, raw eggs and carminatives.

We might add the patient recovered, although it had a terrific diarrhea for several days. Young cattle can stand more grief than almost any other kind of livestock, in my experience.

Impaction in a Horse

Monday night, about midnight, a rancher who had been over to a neighbor's listening-in to the Tunney-Dempsey fight, arrived home and found a big gelding trying to tear the barn down.

When we arrived, we found the animal



Eversion of the Uterus

rolling and plunging around. Synchronizing my jumps with the gelding's, we managed to administer several capsules and antispasmodic hypodermics. In about an hour he quieted down somewhat, and we then gave a large enema of warm, soapy water; applied liniment over the loins; anointed the bruised and skinned parts with an iodin ointment, and gave a purgative capsule.

Our diagnosis was impaction, a very common ailment out here, where alfalfa hay, straw, and green stuff is mixed as a feed. We left two quarts of oil with some nux and carminatives. This keeps the owner busy and makes him think he is doing something for his country.

We returned Tuesday afternoon and, finding no bowel movement, made a rectal examination, and could feel a large obstruction just beyond the rectum. We gave a purgative hypo and another enema, and finally worked out a large mass. The owner told us three other "plugs" came away later. We gave the animal in all five quarts of oil. The swollen eyes were bathed with a lotion composed of one ounce each camphor water and boric acid solution, in which two grains of zinc sulphate were dissolved. We were afraid poll-evil might result from the bruising, but this did not occur. About a month later the owner came in and left two ten dollar bills with a satisfield smile, so that everyone felt better.

Many Coughs in a Car Load

On account of so many peas spoiling in the field, numbers of pigs were turned in to clean them up. One rancher called up and said he had half a dozen dead pigs and a number coughing, out of about a hundred head.

I don't know of anything that will start a riot in a veterinary association meeting any quicker than to touch on this subject. Whether it is "flu;" an infestation of ascarids in the lungs; hemorrhagic septicemia; swine plague; pneumonia; necrotic enteritis; chronic cholera, or what have you, is beyond me. As President Cleveland once said: "We are confronted with a condition, not a theory!"

The condition in pigs resembles canine distemper. A postmortem reveals large areas of hepatization in the lungs; no symptoms of cholera, and usually a number get sick at once.

However, we are more concerned with treatment and results, and we will allow the laboratory men to wrangle over the cause, and whether the germs have blue eyes or not.

We administered the mixed bacterin; ordered a complete change in diet to oats and wheat; suggested good sour buttermilk, and mixed up a powder to put in the self feeder. This mixture consisted of bone meal, charcoal, lime, iron sulphate and a little potassium iodid.

Of the 94 thus treated, six died, and the remainder recovered in fine shape, and, while several were more or less stunted, the others fattened up.

Exercise for Azoturia

A rancher started to town with a load of wheat and soon had a fine case of azoturia. As he thought the animal had colic, he exercised the animal until it dropped. It was a ten-year-old mare.

For several years I have had such good results from the use of chloral, lobelin and oils that I had begun to think it was impossible for me to lose a case of azoturia. It was King Solomon, I think, who remarked after his seven hundredth wedding, that pride goeth before a fall. However, the practitioner has so many falls that he soon gets used to it, just as Solomon finally adjusted himself to married life.

The patient started out delirious from the very first, and her urine was dark as blood. We gave her our treatment and advised the owner to bed her well and keep her from bruising herself any more than necessary.

The next day our patient had improved less than one-half of one per cent, and she was a sorry sight.

In spite of all we could do, she grew "worser and worser," until I put her out of her misery with a .25 Colt automatic. Out of several dozen cases of azoturia a year we have a couple who go "haywire" like this. After three days down they seldom get up.

A Problem in Restraint

Wednesday evening a young fellow brought in his Airedale full of porcupine quills. The dog was a big, strong, ugly brute, and it took a forty-foot lariat to tie him down and all the strength of his owner to hold him while I jerked out about a gross of quills.

I don't like to use morphin, as it causes more or less emesis around the garage, and the mucking out is worth more than the fee. I have often wondered how lobelin works. I have never used it on a mouse-hound but shall try it one of these times.

Amateur Rumenotomy

Early Thursday morning we were called out in a hurry to see two badly bloated cows. When we got there, one was dead and the other one staggering. The owner had "stuck" her, making an incision large enough to throw a cat through. We found the trouble to be impaction of the rumen, and we baled out a wash tub full of dried food.

The cow was heavy with calf, and our prognosis was doubtful. She was a tough one, but showed very little improvement

Pigs Get a Mixed Infection

for about a week. Then one morning a normal calf was found beside her, and she rapidly recovered. We kept her on nux for another week, and used red oil on the incision, and in a month it had healed over.

Satisfied to Lose the Patient

The same morning we were called to see a cow who had jumped over a barb wire fence, instead of the moon, and cut her udder. She had a calf about a week old, and was an extremely nervous critter.

We have never seen a cow bleed like this one did. The hemorrhage had stopped once, and the owner, anxious to do something for the cow, had put the anti-kickers on her. She suddenly went "looney," as he expressed it, threw herself down and started the hemorrhage all over.

Between jumps, and getting the owner to hold her by the nose, we finally got the largest vessels ligated, and dusting

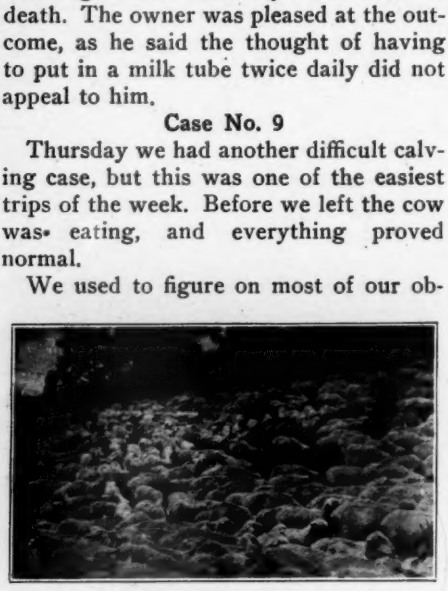
powder applied. We taped the teats, and gave her some adrenalin and some oats.

That night a dog got in the barn and scared her again, and she tore the stanchion out, and was found dead in the morning. She evidently had bled to death. The owner was pleased at the outcome, as he said the thought of having to put in a milk tube twice daily did not appeal to him.

Case No. 9

Thursday we had another difficult calving case, but this was one of the easiest trips of the week. Before we left the cow was eating, and everything proved normal.

We used to figure on most of our ob-



Seen in the no longer wild, but still woolly west

stetrical work in the spring, but now it is scattered all over the year in cows, a goodly number calving in the fall. Most of these cases come early in the morning or after dark.

May, June, April, September and October are our best months, while November and February are the lightest, unless some epizootic floats along. Tuesday is the heaviest day of the week, while Saturday is the lightest, but good for collections. Night calls are not nearly so common as in the past, and a large percentage of these cases terminate fatally.

Friday Furnished Only Exercise

Friday morning fixed the teeth of twelve horses, mostly enamel points and wolf teeth. Injected a sweeney, and examined two horses that were lame.

Called to another milk fever case, uncomplicated, and up in four hours.

Avoided a Distasteful Operation

Saturday morning a young five-year-old mare was brought down with a big, hot swelling over the withers. To make matters worse, the owner had rubbed it well with caustic balsam and she was very touchy. Our experience has been if one can abort these oncoming fistulas without opening it will save a lot of grief.

We administered a mixed bacterin; gave some potassium iodid internally, and gave him some iodin compound ointment to rub over the parts once daily. He came back three times for additional treatment, and it healed up in nice shape. In genuine fistulae, surgery is the only real method of successful treatment.

Forage Poisoning in Sheep

A band of 75 sheep running on stubble and sweet clover were reported not doing very well. We found a number of yearlings with a bad diarrhea; several dead and half a dozen lying around on their sides. Forage poisoning was diagnosed.

A complete change of feed and quarters was advised. Lime was sprinkled over alfalfa hay, and some whole oats given. A lick of lime, charcoal, bone meal, potassium iodid and sodium chlorid was mixed up. A few of the worst ones were treated, but these died getting well. In a week or so the animals were looking considerably better. Had there been any pulmonary symptoms, a mixed bacterin would have been administered. This is usually good treatment in small farm flocks any time.

More Obstectrics

Sunday morning we were called to remove what a psychoanalysis revealed to be a retained placenta, fairly ripe. The removal was quickly effected.

We carry along our own ten-quart aluminum pail, and use any aromatic antiseptic, just so it is therapogen. In some cases we like potassium permanganate and sodium chlorid. We do not like the creolin odors, and never use them.

We first administer a drench to reduce

the inflammation, act as a stimulant and laxative, and usually increase the milk supply. This is composed of sodium hyposulphite, sodium chlorid, nux vomica, cascara and rumen tablets. Where the patient does not look any too good we leave a bottle of this for the owner to give in four doses.

We use rubber gloves and an oiled suit. We first pump in about a gallon of the lukewarm solution which has a tendency to loosen the membranes and deodorize them. We then remove the adherent membranes as gently as we can; flush out the uterus again, and then sprinkle a handful of boric acid on the floor of the uterus. We then insert a uterine capsule, with a small hole in each end, so that it dissolves before the cow calves again.

For the average cow, this is considered a one-call job. Of course, in pure-bred cows and other valuable stock, more time and attention may be given with advantage.

We have had just one fatality this year in these cases. A rather old Jersey cow had twin calves, both dead. A neighbor tried to "clean" her. The next day we were called, and found a large tear in the uterus; the cow was lying down, breathing rapidly, and with all symptoms of a generalized septicemia. We did all we could for her, but she died that night. We have had a number of cases in that neighborhood since.

The Week Ends As It Began

Our last case of the week, like the first one, ended in a funeral. One of our good clients was called away on account of the death of a relative, and left a neighbor boy to look after the stock. He turned them out in the fields Saturday, and on Sunday found a mare showing signs of colic. He gave her a couple doses of Raleigh's colic and bloat medicine, but she grew worse, and we were called just after supper.

When we arrived, we found the patient sitting up on her haunches, covered with a cold sweat, and breathing very rapidly. Some discharge was coming through the nostril. A diagnosis of a ruptured stomach was quickly made. She had evidently picked up a lot of soft wheat, peas, and then filled up on alfalfa, which was rather green and frosted.

She began to roll and plunge, and we got her out of the barn to a big straw-stack, where she fought until death relieved her sufferings about an hour later.

If these cases could be treated when the first symptoms are noticed, a percentage number will recover.

This Cow Calved Yesterday—One Guess As to What Ails Her

And so the week has passed. Fortunately, not all practice is as tough as this. We have traveled over muddy, slippery roads; we have been up all hours of the night, and we have attempted to do our share in alleviating pain and assisting nature to bring about a recovery. We have been successful in some and have failed in others.

We have been in our present location about sixteen years, and have made over 18,000 calls. In that time we have learned a few things about human nature.

A book might be written on the advantages and disadvantages of practice. The only theories the writer has to advance on present conditions is for one to attend to his own business; pay his bills and get about as much pleasure as he can out of life as he goes along.

Local Anesthetics in Veterinary Surgery*

By R. R. DYKSTRA, Manhattan, Kansas
Dean, Division of Veterinary Medicine, Kansas State Agricultural College

DURING the early days of veterinary surgery, practitioners had too much to learn to devote any time to the more humane instincts, especially those that should be operative in veterinary surgery. Veterinarians were more concerned with the development of operative procedures to overcome surgical conditions, and did not pay so much attention to the conditions under which the animal was placed during the operation. Our animal patients could offer no distinctly audible protest, we were in position to confine them so as to make their struggles futile, and because there was no mental hazard on the part of the patient, together with their usually strong constitutions, many of them made remarkable recoveries in spite of the ordeal through which they had passed. The foregoing is true not only in veterinary surgery, but was equally true of the early days of human surgery.

We have now arrived at the point where our technic has been perfected, we have approved operations for most of the ailments to which animals are subject, and now more attention is being paid to the performance of these operations without inflicting torture upon the patients. Not only is a properly anesthetized patient relieved of the pain, the reason for which he does not understand, but the operator also has better mental poise, as there are but few individuals that can work calmly when they know that they are inflicting unnecessary and sometimes terrific punishment upon their dumb patients.

Anesthesia in veterinary surgery will probably never be applied to the same degree that it is in human surgery. In the first place it is not necessary because of the relatively undeveloped nervous system of the animal patient, and secondly, because in some instances the application of the anesthetic in itself inflicts almost as much pain as a minor surgical operation. The contention of the practitioners, therefore, that in the application of anesthetics we must not forget to be practical, is a sound one.

The first attempts to create insensitiveness to pain were by means of the so-called general anesthetics. Of these, the volatile anesthetics, principally chloroform and ether, were given first place. In a well-equipped hospital with more than one technician in attendance, the volatile anesthetics were very useful. In the work of the country practitioner, the situation was entirly different. Not only must the rural practitioner confine his patient, prepare the field of operation and get his instruments ready, but he must also devote the major portion of his time to the operation itself. He was the only trained person capable of administering safely and efficiently a volatile anesthetic. No one man could perform all these duties simultaneously and in a satisfactory manner, with the result that the anesthetic was not used.

This gave rise to the attempt on the part of many to develop a more practical form of general anesthesia. Our own efforts in this connection may be cited. For many years, we encouraged the use of chloral hydrate in solution, administered either intravenously, per os, and per rectum. The intravenous administration, for example, in a horse of two ounces of chloral hydrate dissolved in a pint of a normal saline solution, produced a very satisfactory degree of hypnosis, and if complete unconsciousness of the patient

* Presented at the annual meeting of the Nebraska Veterinary Medical Association held at Lincoln, December 13-14, 1927.

was desired, the inhalation of a very small quantity of chloroform would complete the anesthesia. By means of the same agent administered in solution per rectum, dogs and swine may be made entirely satisfactory from the standpoint of unconsciousness. Cattle are likewise made tractable by the administration per os of two ounces of chloral hydrate in solution. Many practitioners resorted to this agent considering it an improvement, from the standpoint of practicality, over the old volatile anesthetics. The method had its drawbacks, such as difficulty in preparing, under farm conditions, a sterile isotonic chloral solution. Those lacking daily practice found difficulty in the proper introduction of the chloral solution into the venous system, with the result that some bad results were reported.

With these things in mind, both research workers and practitioners continued their research for a satisfactory form of anesthesia, with the result that there are now numerous instances in which local anesthesia may be used with entire satisfaction to the dumb patient as well as to the operator.

In the use of local anesthetics we must remember that certain tissues are highly endowed with sensation, while others are comparatively free from it. Such tissues as nerve, the skin, mucous membranes, serous membranes, especially the parietal peritoneum, synovial membranes, cartilages of incrustation, and periosteum are very highly sensitive. Other tissues, such as muscle, cartilage, ligament, tendon, bone, etc., have a very slight, if any sensitiveness. In resorting to local anesthesia, therefore, our agent should be so applied as to have the greatest contact with the highly sensitive tissues.

The local anesthetic *par excellence* for many years was that natural vegetable agent, cocain and its salts. Its restrictions in veterinary surgery were not as great as in human surgery. In animlas, at least, it is not habit forming. In animals, it is as toxic as for the human patient, and this limits the amount that may be used on any particular patient. Furthermore, so many restrictions were placed around its use by the Harrison Anti-Narcotic Act as to virtually eliminate it as a desirable agent. Fortunately, in its place there are numerous synthetic compounds such as procain, dulcin, locadyn, stovain, etc., which apparently possess all the anesthetic properties of cocain though none of them are habit forming, most of them for practical purposes may be considered non-toxic, and their use is not restricted by the provisions of the Harrison Anti-Narcotic Act.

Local anesthesia finds its most perfect application when the anesthetizing agent may be injected directly over the nerve trunk supplying the area to be subjected to surgical interference. This so-called nerve blocking has many and wide uses in veterinary surgery. In order to apply it successfully, the operator must have a thorough knowledge not only of topographic anatomy, but also of the physiological function of the large nerve trunks.

In the days of the saddle and buggy horse, though it must be admitted to a less extent in the case of the draft horse, we have on numerous occasions succeeded in definitely locating painful regions producing lameness by the use of anesthetics. It was a comparatively simple matter, though often time-consuming, to anesthetize area after area in a lame member and thus by a process of elimination finally arriving at the exact location of the trouble. Veterinarians of more than a decade ago were familiar with nerve blocking as it was applied to the median, ulner, plantar, and posterior tibial nerves. Even today otherwise painful operations upon the limbs and feet may be performed with complete absence of sensitiveness by placing a local anesthetic over the nerve supplying the area in question.

During the last few months, nerve blocking has received great impetus from the visit in this country of the Austrian,

Benesch. His contribution to veterinary surgery was without doubt one of the greatest that veterinarians in America have received in many years. His method consisted simply in the injection of a local anesthetic over the terminal spinal nerves, thus anesthetizing the regions supplied by these nerves. The Benesch method concerned itself only with this type of nerve blocking, or epidural anesthesia, as it is properly called, in cattle.

In America, through the research work of McLeod and Frank[1], the field has been very much enlarged, so that it is now possible to practice this form of anesthesia not only in cattle, but as well in horses, dogs, and cats, and it will doubtless have still further application in other veterinary patients. In horses and cattle the local anesthetic is injected into the vertebral canal at the first inter-coccygeal space, while in dogs and cats the injection is made at the dorso-lumbar space. By making the injections at these points, the anesthetic solution is deposited around the outside of the covering of the spinal cord and therefore comes in contact with the terminal nerves of the spinal cord without producing those very undesirable symptoms so frequently occasioned by the introduction of materials directly under the dura mater, and thus a contact with the spinal cord.

In a brief way, we are generally safe in saying that in epidural anesthesia, performed with proper technic, we anesthetize all that portion of the animal back of the last rib. Upon the entirely conscious animals, therefore, and without apparent discomfort to the patient, we may perform operations upon the genitals, such as removal of the ovaries in the mare and cow by the vaginal route, or in dogs and cats through the usual abdominal incisions. In cases of difficult parturition, by this form of anesthesia all straining on the part of the animal may be controlled. In the replacement of prolapsed organs, this form of anesthesia not only overcomes the resistance of the patient, but provides a relatively lengthy period of insensibility so that the irritation is very much reduced. Operations upon the tail may be performed without the animal's knowledge.

As an instance of the practical value of this form of anesthesia we may mention that we were called upon to examine some heifers affected with ano-vulvar pruritis so severe that the animals were almost tearing themselves to pieces. The irritation was instantaneously controlled by the injection of a small amount of anesthetic through the first intercoccygeal space. Those particularly interested in the details of this operation should not fail to read the articles by McLeod and Frank, and by Frank alone, in the December issue of the Journal of the American Veterinary Medical Association.

Almost equally as important as the announcements in regard to epidural anesthesia was the announcement a few years ago by Bemis of a technic for blocking the mandibular and alveolar nerves in horses so that otherwise painful dental operations, operations upon the sinuses, and in the nasal cavities may now be performed painlessly. For many years, there had been no satisfactory means of anesthesia for these highly painful operations, because, if under general anesthesia, there was always the iminent danger of septic material passing into the lungs, with resulting unfavorable sequalae. No veterinarian of today would consider that his technic had been entirely correct if he fails to resort to mandibular and alveolar nerve blocking in many operations upon the head. Literature giving detailed information as to the technic is now virtually universal.

There still remains many veterinary surgical operations in which the anesthetic cannot be deposited upon a large nerve trunk. We cannot, therefore, expect so satisfactory a degree of anesthesia. The method I have in mind is

[1] Epidural Block—Benesch Anesthesia, by Captain Gerald W. Fitzgerald, VETERINARY MEDICINE, Vol. XXIII, No. 1, January, 1928, pp. 36-38.

essentially one of infiltrating the tissues with the anesthetic. We have, during the last year or two, for example, in contradistinction to the use of volatile anesthetics previously, performed most of our poll evil and fistulous withers operations by the administration of one or two ounces of chloral hydrate intravenously or per os and the use of a more or less dilute local anesthetic, essentially subcutaneously, and to a lesser degree directly into the inflamed and diseased tissues. In this method the operator must not forget those tissues endowed with the highest degree of sensibility and must attempt to apply the anesthetic as closely to them as possible. It must be remembered that anesthetics that are desired to infiltrate or be diffused through the surgical area will not penetrate such tissues as dense aponeuroses, and therefore the surgeon must again have recourse to an intimate knowledge of anatomy.

The infiltration or diffusion method is also of great value in many minor surgical operations such as the removal of tumors, the opening of abscesses, operations upon hernias, and in numerous other conditions.

It has been the purpose of this paper, without going into specific technic which may be found in current literature and in textbooks, to outline the wide application and the great use of anesthetics locally applied. Veterinarians cannot afford to disregard the good will of their clients, as well as bearing in mind one of the fundamental principles of veterinary surgery—to relieve pain—by failure to resort to the use of these agents. I have a feeling that veterinarians perform operations so frequently and handle animals so generally that our humane instincts are somewhat dulled in many cases. We should again attempt to get the viewpoint of the owner of the animal. Many of the pet animals brought to us are almost members of the family, and to subject these almost human patients to pain and suffering is bound to produce an unfavorable impression upon the owner of the animal. From this standpoint, therefore, and from the standpoint of humane surgery especially, we should resort to the use of anesthetics to the limit.

PHOSPHORUS DEFICIENCY CAUSES HEMIPLEGIA IN SWINE

In the November issue (page 459) L. F., Kansas, asked information concerning hogs weak in the back. Two years ago, I witnessed about the same trouble in hogs I treated.

This condition was coming on year after year, but got worse. The condition I am referring to was in 200-pound hogs. The condition was corrected with cod liver oil given with a dose syringe. Good results followed in a short time.

The next year, tankage was added to the ration with no further trouble. Mineral was given a trial but failed to benefit the animals.—T. J. C., Wisconsin.

Comment: We are pleased to have your report on what is apparently phosphorus deficiency in swine in your section of the country. Your treatment appears to produce the desired results, but I do not understand why the mineral food, if properly prepared, did not give you substantial benefit in those hogs. The Kansas and Texas hogs you will recall, were on pasture and a vitamin D deficiency (the only condition we should expect cod liver oil to remedy) could hardly be assumed. The soil in sections of your state is known to be deficient in phosphorus and animals fed on feed grown on such soil are prone to suffer from phosphorus deficiency. Phosphorus would be supplied in the tankage with which you apparently prevented the recurrence of the ailment, and the result seems logical. This however, does not explain the benefit accruing from giving cod liver oil unless we assume the condition you observed was different from the one described in Kansas.—A. T. K.

The Interrelation Between Disease Control and Animal Husbandry Problems*

By JOHN R. MOHLER, Washington, D. C.
Chief, Bureau of Animal Industry, U. S. Department of Agriculture

After all these fair words and sentiments bombarding me right and left, I devoutly wish, as a modest and retiring man that right here we might drop the curtain and say as did Hamlet, "the rest is silence."

No such happy fortune is mine and I must, however reluctantly, take up the burden of the song and try to respond in kind to the kindly overtures you have made to me so abundantly tonight.

Listening to these seductive addresses, of which I am the embarrassed subject, I might if I did not really know better, dream on and fondly imagine that to me had been vouchsafed the boon asked for by Robert Burns when he said:

"O wad some power the giftie gie us,
To see oursels as ithers see us."

Certainly nothing I have done can justify these high encomiums. You have lauded me, I am sure, beyond my deserts. But it is true that "our praises are our wages" and I deeply appreciate the friendly feeling apparent in all your references. Any words at my command seem to me futile and little able to express my warm and heartfelt thanks. However, as a public servant and as a friend of all of you I want you to know that I feel very deeply the generous tribute you have paid to me on this memorable occasion in my life.

Your program committee has asked that I discuss briefly the interrelation between disease-control and animal-husbandry problems.

These two classes of problems, of course, are so inseparable as to be a matter of common knowledge. So my remarks will largely deal with the manner in which all of us can best work together for the common good. In its natural course of development the business of producing live stock has brought about many related activities and professions. We have the business of transporting live stock; the business of selling and trading; that of meat packing and distribution. We have also the professions of animal husbandry and veterinary medicine. Related to the latter profession are scientific studies dealing with pathology, immunology, and parasitology. A still further branch of the live stock industry is the preparation of serums and various other biological products. We have the wool industry, the hide and leather industry, and the production of countless by-products of animal origin. Each branch when efficiently conducted is an asset to the basic industry of growing domestic live stock.

There are times when the interests of one group may overlap or even conflict with the interest of another. That condition, illustrated perhaps by the former conflicts between cattle and sheepmen in the range areas, has largely disappeared. And looking at live stock problems from the vantage point where we now stand, it is clear that the interests of the various trade groups and professions are now very closely interlinked and mutual. No one group can hope to accomplish much without the sympathetic support of the others.

* Remarks made at a testimonial dinner given by the American Society of Animal Production at the Saddle and Sirloin Club, Chicago, Illinois, Dec. 1926.

Problems Change With the Times

Though from year to year conditions within the industry appear to change but little, a sketchy review of the past shows remarkable changes. The animal breeders of the Old World, the sturdy American pioneer traveling westward with his covered wagon, the American cowboy and others of his type—all these have left a heritage which the live stock industry must always treasure. But now that general migrations of people traveling with their herds and flocks are largely over, the problems have changed materially. The picturesque heroism of the past has taken different form. The stock owner who knew how to combat the catamount and the prairie wolf encountered a different problem in anthrax and hog cholera. And his foe has proved to be even more mysterious when it is some strange foreign malady like foot-and-mouth disease. At such a time the scientist who has provided a means for preventing or eradicating such disease is the stockman's valuable friend and ally.

The problem of regulation likewise has been a changing one. The independent spirit of the American stockman subconsciously resists legal restriction, but his judgment recognizes the necessity for curbing evils within the industry or dangers from the outside that can be controlled in no other way. The exclusion of animal diseases from abroad, the control of those that are present in the United States and would otherwise spread, the punishment of persons who would betray the welfare of the live stock industry for selfish gain, the humane treatment of animals—these are all problems in which some regulation is essential.

Scientific Studies, a Basis for Regulations

Regulatory measures in turn depend largely on scientific knowledge of animal anatomy and disease. On January 1, 1927, a new Federal order, affecting international trade in fresh and frozen meats, becomes effective. This regulation prohibits the importation into the United States of fresh and frozen meats from countries having foot-and-mouth diseases or rinderpest. The regulation is based on scientific study and the experience of other countries in combating these highly infectious maladies. It applies to fresh and frozen beef, veal, mutton, lamb, and pork. Though no serious trade effects under present tariff conditions are in sight, yet the new order excludes fresh and frozen meats from several important meat-producing countries. This is an example of the extremely close relation between live stock production, scientific study, and regulatory measures.

Improved Methods Developed

Fortunately, the United States is now free from foot-and-mouth disease. The manner in which the outbreak in Texas was confined to a very small area may be of interest. The flat topography of the region, together with the wet season, made digging of trenches unfeasible as some filled up with water as soon as dug. Accordingly, burning of carcasses was necessary. The equipment for incineration consisted of large, oil-burning machines using compressed air to throw a blow-torch flame. This equipment was used in connection with other fuel, chiefly cordwood. The oil-burning machines were easily portable, and as the work developed they were sent to various infected farms in much the same manner as a fire department responds to a call.

Highly mobile equipment of this kind enabled the eradication forces to destroy infected animals within a few hours after discovery, thereby preventing exposure of surrounding healthy herds. This development illustrates the aggressive steps that field workers engaged in suppressing animal diseases are taking to protect and safeguard our domestic animals.

In the case of rinderpest, which has never gained entrance into the United States, every precaution is being taken. In a store room in Washington there has been constantly maintained for the last 9 years a supply of rinderpest serum. This

serum is from the Philippine Islands and is renewed from time to time so as to insure potency. Enough is kept constantly on hand to immunize about 100,000 cattle. The procedure in the case of a rinderpest outbreak would be to immunize all the cattle in the danger zone, thus preventing the spread of the infection. The principle is similar to backfiring for stopping a forest fire. We hope that it will never be necessary to use this serum, but it is ready if needed.

A Friendly Public Attitude Toward Live Stock Industry

An outstanding and most pleasing development has been a steady rise in public good-will toward the nation's live stock industry, including related branches. Conditions surrounding transportation of live stock to market have improved immeasurably. It was not unusual 50 years ago for cattle to shrink more than 200 pounds per head in traveling a distance of 1,500 miles from the range area to Chicago. Sometimes cattle and sheep were packed in the same car, the smaller animals being trampled upon by the larger ones. Heavy saplings with sharp spikes and goads at the ends were commonly used for forcing stock into overcrowded cars. Shrinkage of cattle between Chicago and Boston ranged from 10 to 15 per cent.

These distressing conditions, coupled with a similar situation in steamship transportation, are in striking contrast to the greatly improved and well-regulated system of live stock handling of today. Public opinion has gradually changed from one of rebuke and censure to one of commendation. Records of press clippings for the last few years show a surprisingly large proportion of favorable editorial comments in the metropolitan papers as well as in live stock papers on the improved conditions and constructive activities. Such a rising tide of good-will should be highly gratifying to all branches of the live stock industry, for the busy public does not discriminate closely in the endeavor to single out the individual component parts. The medical profession is keenly interested in the aggressive methods used to combat animal diseases and sits in at live stock sanitary meetings. The banker, at one time skeptical about financing the purchase of pure-bred live stock, now lends his support to pure-bred-sire activities. The housewife is coming to recognize that meat, properly inspected, is one of the best, safest, and most wholesome foods for her family.

Such good-will naturally has far-reaching economic importance, but more important, perhaps, is the stimulating effect on those of us who have selected some branch of the industry as our life work. Fortunate, indeed, is the worker who is proud of his calling, and in whatever way each of us may serve, the pride of service adds richly to our lives. The animal breeder is a sculptor with living material, and his handiwork lives on for generations. The feeder of live stock, through his skill, supplies the material that gives mankind physical and mental vigor in such abundance. A great nation travels forward largely on the nature of its food intake.

Manifold Uses of Animal Products

It is fitting, therefore, that we should study and also inform the public regarding the many ways in which domestic animals supply food and clothing, and add to industrial life, sports, recreation, and art. Articles of food and raiment are most familiar, but few would suspect that the symphony orchestra, for example, has need of animal products. Yet it depends largely on its violin sections with their horsehair bows and sheepgut strings. The household medicine chest contains numerous products of animal origin. Horsehide and pigskin cover the balls for the great national sports—baseball and football. The stained glass windows of churches are in part a derived dairy product. Other uses of live stock products are myriad.

In considering the part which animal-disease control has played in enhancing the usefulness of the industry we soon encounter many technical problems. Take such a familiar product as sausage and trace its manufacture. It soon leads us to the problem of so-called nodular-gut sheep casings. Such casings result from the attacks of nodular worms in the sheep's intestine. When the nodules are present the intestine is worthless as a sausage casing.

One of the most conservative American citizens, perhaps, is General H. M. Lord, Director of the Budget. You are familiar with the desire of national officials to limit public expenses and reduce them wherever possible. Yet the need for controlling and eradicating animal disease has impressed our highest officials and statesmen. In a recent discussion of funds for tuberculosis eradication, General Lord turned away from the papers on his desk and oberved a scrubwoman who was cleaning an adjoining office. "Dr. Mohler, when I think of the problem of tuberculosis," he said, "I am thinking not so much of dollars and cents, but rather of that woman's family. I am wondering whether her young children are getting safe milk." Whether one's business or social station in life is high or humble, the tug on the heartstrings is much the same.

Individual Stockmen May Help

Though the broader disease-control problems are vested largely in state and Federal officials, there is abundant work for all. Every live stock owner can do much to improve the situation. True, the underlying principles and methods are technical but their application is readily understood. The thoughtful horse breeder does not mate an animal affected with spavin. The western cattlemen or sheepmen may do much toward preventing loses caused by poisonous plants. Every live stock owner is much in the position of the businessman who prided himself on economy in management. "I keep my organization as simple as humanly possible," he said. "That's why I make a comfortable living. But there are other fellows who hire somebody to do the work, then somebody else to see that the first man does it, and then a third man to keep a record of what the other two do." This illustration points out the importance of every stock owner's doing all within his power himself to keep his animals healthy and the premises sanitary.

Problems of disease control and production are so closely related that the stock owner can not hope to escape the primary responsibility for the health of his animals. When he demands, through his state legislature or through the Congress, that the work be done for him he sets in motion machinery which is more or less expensive even though operated with utmost care and economy. Necessarily there must be supervision, records, reports, and an accurate accounting to the legislative power. But since such work is being done and the information exists, stockmen are entitled to know what service they are receiving. Here are a few results with figures in round numbers:

Some Current Results of Veterinary Work

Thus far in systematic tuberculosis eradication which began in 1917, more than a million reactors have been removed from herds of the country. Since then the average degree of infection has fallen from about 4.9 per cent to 2.8 per cent. Counties engaged in tuberculosis eradication number 785 or ¼ of the total counties in the United States. Of these 228 have eradicated the disease or reduced it to a negligible quantity and 151 additional counties have completed one test. Approximately 15 millions of cattle are under Federal and state supervision, of which 1½ millions have been officially accredited and over 11 millions have passed one clean test.

Federal employes last year inspected more than 21 million cattle at market

centers for signs of disease with a view of preventing interstate movement of infected stock. Inspection extended also to about 20 million sheep and 36 million hogs. Of the hogs approximately half a million were re-shipped for feeding and breeding purposes after receiving the preventive-serum treatment. This safeguard against cholera is another typical example of the inseparability of production and disease control problems.

Hog-cholera serum made under Federal inspection during the year amounted to about half a billion cubic centimeters. In addition, inspected virus for the double treatment of hog cholera aggregated about 37 million cubic centimeters. In addition to these biological products, establishments operating under Federal licenses—which include practically all in the country—made about 25 million doses of other biologics for preventing or controlling animal diseases.

Sheep inspected for scab numbered over 23 million and cattle about 13 million. Inspections or dippings to eradicate cattle ticks numbered about 16 million during the year, and altogether approximately 16,000 dipping vats were in use. Since this work began, 72 per cent of the previously quarantined area in 15 Southern States has been freed of ticks. More than 350,000 cattle, sheep, and swine reaching the United States from other countries received Federal inspection as a safeguard to prevent introduction of disease. Railroad cars numbering 76,000 were disinfected under Federal supervision during the year. As a means of preventing the virus of foot-and-mouth disease from entering the country special efforts have been directed toward the substitution of excelsior, paper, and other safe packing material for hay and straw formerly used. The proportion of hay and straw has been reduced to less than 10 per cent of the total. This figure represents a removal of an important menace to the nation's live stock.

Federal meat inspection included veterinary examination of approximately 70 million food animals both before and after slaughter. The examinations disclosed the fact that tuberculosis and hog cholera continue to be the most serious diseases now affecting food animals. Incidentally, the cost of Federal inspection, including supervision of cured and canned and other meat food products, laboratory examinations, and other expenses, amounts to about 6 cents per animal.

Satisfactory Compliance with Regulatory Laws

Compliance with the regulatory laws for controlling animal diseases and protecting the industry has in general been satisfactory. Violations are comparatively few, due largely to the excellent public opinion that supports the strict enforcement of the laws. Prosecutions usually result in conviction.

Yet every effort is made to administer these disease-control measures in a manner that will interfere as little as possible with the natural free movement and trade in animals and meats. Most of the inspectors have been farm boys, and are still so at heart. They are fully aware of the shippers' problems, of the anxiety of the sheep or cattle owner whose animals must be dipped for scab perhaps in cold weather. Many of these inspectors work at remote field stations and under but slight direct supervision. So far as reports and personal knowledge show, these men almost invariably have the confidence of stock owners with whom they come in contact.

I hope that this occasion where live stock production and disease-control activities are both represented so fully, will encourage those who are present and their friends to become acquainted more closely with the Federal and state inspection forces throughout the country.

Future of Industry Encouraging

Probably at no time in the history of the live stock industry has there been such a general spirit of good will and a desire for all to work together on a golden-

rule basis. Compared with the past, the present shows reasonable security from the more serious animal diseases and the gradual eradication of such maladies as tuberculosis, Texas fever, cattle and sheep scab, and other less serious live stock foes.

Besides the greater safety in our own animal production which such conditions bring, they make possible also an outlet for our surplus meats and to some extent, animals also, especially breeding stock. They encourage the animal breeder in his work.

The Scot has been the victim of many pleasantries, but one of Sandy and his son in a motion picture palace is especially suitable at this time. The little Scot was hot and begged a drink of cold lemonade. "No, no," Sandy reproved him, "wait until the intermission." But the boy continued to beg for a cooling drink much to the irritation of Sandy. "No, me lad," he finally said, severely, "wait until the intermission. Then I'll tell you a ghost story that will make you go cold all over."

The live stock industry also has had its need for economies, also its fevers and chills. But it has seldom been in need of strong medicine or surgical treatment. One of the chief causes for the high recuperative powers in all branches of stock raising from temporary ailments has been the determination to master all difficulties and prevent the same difficulty from recurring. Research workers in both animal husbandry and disease control have performed most of their work on the "firing line" where the acute problems exist.

Increasing Importance of Research Work

Without taking time to review some of the older and more familiar discoveries, I may cite the highly successful system of swine sanitation developed in McLean County, Illinois. The late Dr. Ransom, who traced the life history of the deadly roundworm and worked out a method of prevention, was a scientist of the highest type. Though primarily a laboratory man, he saw the necessity of dealing with roundworms on their "home grounds," so to speak. The method worked and the system soon spread from McLean County, Illinois, throughout the Corn Belt. Similar investigations are now in progress in the South at Mobile, Ga., and McNeill, Miss.

The last few years have witnessed the inauguration of important meat investigations, the establishment of other important experimental work, exceptional interest in the improvement of livestock by breeding, new light on the food value of meats, and many other distinct achievements.

Through the excellent cooperation of various states and some private organizations, Federal research in animal husbandry is now in progress at about 20 strategic points throughout the country. Federal disease-control work is going forward in all the 48 states and the territories of Alaska and Hawaii. As the experiments develop there has been a greater and greater tendency for each class of workers to contribute something to the field of the other. A physiologist working on stock-poisoning plants at Salina, Utah, obtained in connection with his studies, valuable data on the normal growth of range cattle. In another case, a department veterinarian in Idaho, who is exceptionally skilled in diagnosing sheep diseases, has traced by far the greatest proportion of ailments in flocks examined to nutritional disorders.

The serious hog-cholera situation during the last few months of 1926 shows also the closest kind of relation between disease control and production problems. From the best estimates available, about 1½ million hogs died of cholera during that period. The facts surrounding the serious outbreaks are familiar and draw attention forcibly to the importance of keeping a much larger proportion of our swine population immune by the preventive-serum treatment instead of allowing the proportion to drop as low as 20 per cent, which prevailed in September when the outbreak began.

Research has given the swine industry hog-cholera serum, but that does not solve the problem entirely. There must be sufficient demand for the serum to encourage its manufacture in adequate quantities. Quantity production in response to a stable

demand in turn tends to bring about economical production and economy of immunization. The maintenance of liberal reserves of serum, either privately financed or administered by public funds, is an additional safeguard. In this connection it is highly advisable to immunize all hogs that have access to lots and pastures where hog-cholera infection has existed within a year. Harrowing such premises will tend to free them of infection more quickly by exposing the lurking virus to sunlight and the elements.

Watch the Corn Borer

Curiously, a rather threatening new cloud on the live stock horizon is a plant pest, yet it deserves our close attention. I refer to the menace of the European corn borer. Corn is almost a synonym for beef and pork in this country. Measures to prevent the further spread of this crop pest therefore deserve the sympathetic study and support of live stock producers.

In general, I believe that the advancement made by research workers in the science of animal production and control of livestock enemies has progressed farther than the utilization of such discoveries. There has been a tendency to wait until the other person has tried the new plan. The research worker possibly leads most other businesses and professions in his willingness, or even eagerness, to try. It is true he often fails, but he has the courage to make the attempt and the true scientist never gives up. Because of this peculiar mental attitude, the biographies of scientists should be inspiring reading, especially in connection with teaching work in which many here are engaged.

It is a truism that agriculture is the foundation industry of our country. It is essential to our social and political welfare that it be made more profitable. The most important item in increasing agricultural prosperity is profitable production of live stock. The Bureau of Animal Industry is organized in a manner providing a wide service for improving the condition of live stock producers. We have combined in this organization both the scientific and the practical factors. The closer the alliance and cooperation of our forces with those powerful forces of the agricultural colleges and experiment stations, the greater will be the influence and usefulness of the combined agencies in helping to better livestock conditions, in increasing our national wealth, in protecting public health, and in adding to the comfort and happiness of rural life.

If there is any one thought that I would emphasize more than others in the remarks I have made, it is to commend the efforts of those who are doing something constructive to advance the business of livestock raising and its related activities. It is the effort against odds that counts, for that means progress. Some are participating in various competitions during the International. The essay contests are splendid competition. And for everyone there is the ever present struggle against economic forces—commonly known as making a living.

Robert Louis Stevenson sums up this thought admirably in a very brief passage: "The spice of life," he wrote, "is battle; the friendliest relations are still a kind of contest; and if we would not forego all that is valuable in our lot, we must continually face some other person, eye to eye, and wrestle a fall whether in love or enmity. It is still by force of body, or power of character or intellect, that we attain to worthy pleasures."

The thought I have quoted brings out the value of continuing our conquest courageously over all problems that may arise. If we must differ in views, let those differences be discussed candidly, but in a friendly spirit. And, finally, when we have done our best let us enjoy, as on an occasion like this, the fruits of our mutual efforts.

The toxic action of cottonseed meal is probably due to a substance called gossypol. It has been found that a high temperature diminishes the toxicity of gossypol. It has further been demonstrated that cottonseed meal that has been autoclaved has only slight toxic effects and this suggests the possibility of subjecting it in the process of manufacture to a temperature sufficiently high to render the product less toxic. *Dairy Science.*

STATE AGRICULTURAL COLLEGE JAN 21 '28 LIBRARY

Abortion But One Link in the Chain of Genital Diseases

By W. L. WILLIAMS, Ithaca, N. Y.

Abortion has never been, and is not now, common in mares, as compared with cows. Admittedly it plays great havoc amongst mares now and then, when the stage chances to be properly set. Such was the case in the concentrated breeding area about Bloomington, Ill., in the eighties. The setting of the stage shifted and the observed expulsion of fetal cadavers was largely displaced by other types of interferences with reproduction, without necessarily changing the species of the infecting parasite.

Abortion should be constantly viewed as an intermediate stage in the chain of genital disease. The most severe expression of genital disease is sterility, in which the infection is so virulent that the ovum is not fertilized, or, what is quite certainly more frequent and destructive, the fertilized ovum is attacked and destroyed without pregnancy having been recognized.

The next link in the chain is the recognized death and expulsion of an immature fetus—abortion—followed closely by the early expulsion of the diseased, living fetus—premature birth—or of the well-matured dead fetus—still birth.

Then follows birth at term, at which essentially all healthy, along with some diseased young are born.

Finally, especially in the mare, there are numerous cases of prolonged pregnancy, in which, as a rule, the foals are seriously diseased; the delay in birth is caused by the utero-fetal disease.

Accordingly a female which aborts faces three outstanding possibilities.

1. The uterine disease becomes more virulent, the ovum is destroyed without recognizable pregnancy, the animal is sterile.

2. The disease remains static and the animal again becomes recognizably pregnant and aborts. It is the least probable of the three.

3. The disease becomes alleviated and the animal produces living young of one of the following groups:

a. Premature, diseased young.
b. Young at full term, either healthy or diseased.
c. Delayed birth of diseased young.

So with the other phenomena indicative of sexual disease. They rarely remain static, except in the case of the end-result, sterility, but shift backward and forward in harmony with the vacillations in the extent or intensity of the disease.

The comparative rarity of abortion in mares may be in part logically explained as follows:

1. There is considerable ground for the belief that many fertilized ova in the mare die very early and are absorbed, or are expelled unseen. These are necessarily designated sterility. The expulsion of very small embryos by the mare is done with great facility, the membranes have no tendency to be retained, the mare is not under so close observation as the dairy cow, and thus small cadavers are more likely to be expelled unobserved by the mare than by the cow.

2. A relatively large proportion of equine fetal cadavers are expelled late in gestation and is then designated by the more polite term of stillbirth, or the foal is born dead.

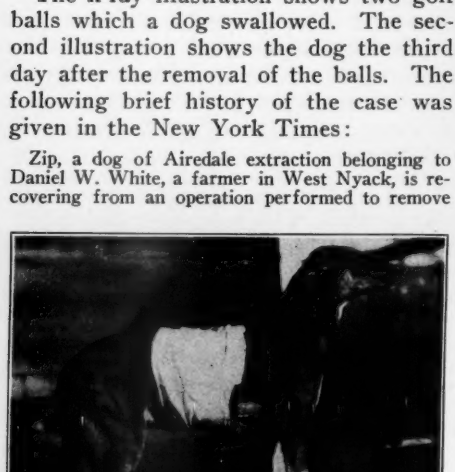
3. I have attempted to show, in a previous publication[1] that the mare is preeminently addicted to prolonged gestation, or delayed birth. I believe I have therein shown that it is pathological and that these delayed births represent an

important part of the deaths of bovine fetuses classed as abortion: in other words, in the cow, utero-fetal disease abbreviates and in the mare prolongs the duration of pregnancy. The evidence at present available does not indicate that the cause of abortion in mares differs in principle from that which delays birth.

REMOVAL OF GOLF BALLS FROM DOG'S STOMACH

The x-ray illustration shows two golf balls which a dog swallowed. The second illustration shows the dog the third day after the removal of the balls. The following brief history of the case was given in the New York Times:

Zip, a dog of Airedale extraction belonging to Daniel W. White, a farmer in West Nyack, is recovering from an operation performed to remove

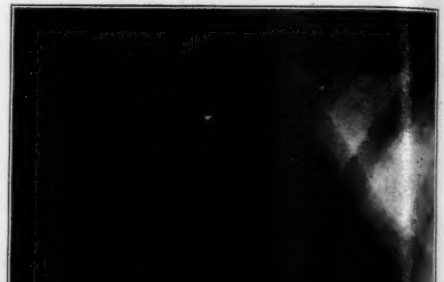


two golf balls from its stomach after it had deliberately swallowed them.

White's little daughter was playing with the dog in the yard of their home about a week ago. She was throwing a golf ball and the dog was running and retrieving it. Finally Zip returned without the ball. The little girl thought the dog had been unable to find it, so she took another new golf ball and threw it a few feet, only to see Zip rush to it and swallow it. She told her parents, but as the dog seemed to suffer no ill effects, they decided to let the matter rest.

Later, however, Zip suffered from violent indigestion. The Airedale was taken to Dr. Edward F. Harms, and X-ray photographs were taken of its midriff. These clearly disclosed the two new golf balls.

Dr. Herbert Harms, a practicing veterinarian in Pearl River who performed the operation for one of his clients, stated to me that the incision was made on the median line and after the removal of the balls from the stomach, the stomach was sutured with No. 0 Dulox catgut. The



opening in the stomach was closed by uninterrupted sutures.

On the second day following the operation, the animal was given a limited quantity of milk and barley water every two hours. This was continued for one week. On the eighth day following the operation, the dog was placed on a full diet.

Following the operation, there was only a slight rise in temperature which persisted for three days. The dog made an uneventful recovery.

Pearl River, N. Y. A. Eichhorn.

Nodular worms which have been so troublesome to sheep in the south, are spreading into the Central West. On the Pacific Coast and in the Rocky Mountain states the liver fluke has been taking a heavy toll. This creature spends part of its life cycle in the snail, but that fact does not make the fluke very slow in attacking sheep. One Oregon sheepman lost 1,500 head of sheep in a year from fluke infestation.—John R. Mohler.

Gout in Poultry

By F. D. PATTERSON, JR., Auburn, Alabama
Department of Veterinary Medicine, Alabama Polytechnic Institute

DEFINITION: Gout or uremic poisoning is a nutritional disease characterized by internal deposits of sodium urate.

Occurrence: Mature birds are by far more susceptible, in fact this disease is practically confined to mature birds, especially old fowls. Individuals vary to a marked extent in their susceptibility to gout; so much so that individual susceptibility occasionally plays a greater part in some individuals than does the amount of nitrogenous concentrates fed, for occasionally a bird receiving a moderate or rational quantity of nitrogenous concentrates in its diet, becomes affected with gout.

Etiology: The cause of gout is, inability of the fowl to properly eliminate the waste products of nitrogenous metabolism. This condition is found most often in fowls that receive excessive amounts of nitrogenous concentrates in their ration. Under such feeding conditions the organs of elimination are unable to cope with the excessive amount of uric acid products, so that these poisonous products accumulate in the body in the form of sodium urate.

As the kidneys are the organs most concerned in eliminating uric acid products, any abnormality that impairs kidney function may lead to gout.

Exercise is an important factor for the disease is confined almost entirely to birds that are confined to small runs. Birds running at large are seldom affected. Exercise is very inducive to proper elimination and birds when on free range receive food elements that are essential to proper metabolism, and body function in general. Close confinement is a prominent predisposing factor.

Green food is another important item to consider for it favors proper elimination and otherwise assists in keeping the fowl's body in a normal state. The affects of this valuable element has been discussed in a former article. (January issue of VETERINARY MEDICINE.)

Summarizing the causes of gout in fowls are:

1. Feeding excessive amounts of nitrogenous concentrates.
2. Close confinement.
3. Green food deficiency.
4. Individual susceptibility.
5. Empaired kidney function from any cause.

Symptoms: The symptoms may be divided into two groups, namely; visceral and articular.

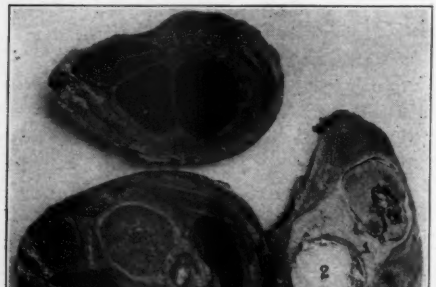
In the visceral type of gout there are no pathognomonic symptoms that can be relied upon for a positive diagnosis. Gout usually runs a chronic course, rarely if ever do we find it in the acute form. I have autopsied one bird that died suddenly and the only diagnostic lesions that could have caused death were those of a well defined case of visceral gout; lesions of this disease were extensive in this bird. It is of course possible that something else was the immediate cause of death and didn't show up on autopsy. The diagnosis on this hen, however, was gout or uremic poisoning.

The symptoms noticed in visceral gout are: diminished appetite, sluggishness, anemia, emaciation, diarrhea, which often contains an excessive quantity of sodium urate, indicated by the amount of chalk white material passed with the feces. Unless the articular type is also present a satisfactory antemortem diagnosis can not be made.

The symptoms manifested in the articular type are: lameness, enlargement of the joints, especially the tarsal, metatarsal and phalangeal. The swelling of the

joints are at first soft, hot and painful, later they become hard and pain diminishes or completely disappears. The same is true of the thermic symptoms. A thick yellow material sometimes exudes from the affected joint. Secondary bacterial infection may complicate the joint type, in consequence the symptoms become modified. Urates at times may produce or aid in producing necrosis. The lameness may be permanent, remaining often after symptoms of gout have disappeared. This being due to permanent sequelae as ankalosis and calcareous deposits. One or both legs may be affected.

Lesions: The characteristic lesions of gout are sodium urate deposits in the



A mass of eggs retained in the oviduct. 1, a shell wall; 2, yolks; 3, masses of albuminous material in a semi-solid state

viscera and in the joints. This deposit occurs as a chalk white material that appears to be smeared over portions of the viscera; in some instances it looks as if the material had been sprinkled on, especially is the latter true of the peritoneum and similar structure. No visceral organ is exempt, and I have seen cases in which the entire viscera was involved.

The kidneys often become enlarged, light in color and spotted with an excess of urate. When a kidney so affected is incised the urates are found to be of a pasty nature. The ureters are frequently much enlarged and packed with the same type of chalk white pasty urates. The heart is very often affected, the urates occurring on and beneath the pericardium in large amounts.

In articular gout the same characteristic deposits are found in the affected joints. If the urate deposits are mixed with a small amount of acidulated water and examined under the microscope numerous needle like crystals of sodium urate will be found.

Treatment: Allow birds all the exercise practical. Discontinue the feeding of excessive amounts of nitrogenous concentrates. If many birds are affected, eliminate the nitrogenous concentrates all together from the ration until birds are normal. Buttermilk however is a protein feed that can be utilized to advantage, although it is an animal protein feed, it is a harmless one and very beneficial to the health of the flock. Feed all the fresh tender green food available.

I have had the best results by giving free range where birds can find green food in abundance and feeding them on corn or scratch grain, keeping fresh water always before them in a convenient place. Encourage them to drink large quantities of water for water aids proper elimination via the kidneys. This applies to affected individuals as well as to the flock as a whole. An initial dose of epsom salts to the flock may prove advantageous. Give one heaping tablespoonful dissolved in drinking water to each twelve birds.

Individual treatment is sometimes necessary especially in valuable birds and those that are not badly affected. The treatment above outlined is the most important, however. It may at times be advantageous to administer medicinal treatment to certain individuals. The therapeutic agents that are best suited for gout are bicarbonate of soda, sodium salicylate and colchicum for internal use. In the articular type, external applications of preparations containing methyl salicylate and iodin may be of some benefit.

Diet and exercise are the foremost factors in treatment.

Poisonous Plants and Plant Poisoning*

By L. H. PAMMEL, Ames, Iowa

MUCH interest has been manifested in a discussion of the subject of poisonous plants. Veterinarians especially are taking a deep interest in the subject, because so many cases of stock poisoning are reported in various sections of the country.

Since very ancient times there has been interest in the subject. The ancients made use of poisonous plants to destroy the enemy, whether it be human or animal. Much of the ancient knowledge concerning poisonous plants is involved in myth. Hecate was said to have been the discoverer of poisonous herbs, and from him the knowledge passed on to others.

It may be interesting to state in this connection that the ancient Egyptian kings also had a knowledge of poisonous plants. They were familiar with the use of such plants as hyoscyamus, aconite and conium. Some of the Egyptian kings even made experiments with these poisonous plants, and it is of interest to note in this connection that they knew about prussic acid, or at least they knew material could be extracted from the peach pit that was deadly poisonous.

The Greeks and Romans were familiar with a large number of poisonous plants, and as early as 304-138 B. C. two treatises were written on the subject of poisonous plants. The poisonous properties of henbane, aconite, aconium and fungi were discovered. Later antidotes were used to counteract the poison. The ancient Greek philosopher, Dioscorides, 40 to 90 A. D., divided poisons into three distinctive types: animal poisons, as the poisons from venomous snakes; plant poisons, as the poison from opium, and conium; mineral poisons, like arsenic.

Primitive man knew how to make use of poisonous substances, thus for instance a large number of substances were designated as fish poison. They were used by the ancients to poison fish.

Not very much positive experimental work could be undertaken with poisonous plants until something was known of the chemistry of poisons. The discovery of many poisonous substances dates back to early in the last century. When the poisons were once recognized from a chemical standpoint it was easy to make definite experiments and get the action of the poisons on animals, and many fine treatises were published on the subject of poisons.

Among the ancients, I want to mention one man in particular, Socrates, who had a large influence on the Greek civilization. There were several other persons who had a great influence on Greek civilization; Demosthenes, Hannibal and Cleopatra, all of whom lost their lives through the administration of poison. A little over a year ago I called attention to the plant that put Socrates to death, namely the poison hemlock (Conium) which is found in several different places in Iowa. It is more or less a weed. It is also cultivated as an ornamental plant under the name of California Fern, or Colorado Fern, and often causes death to stock, and even man. I found this true in several places in Iowa.

It is a good thing to have a knowledge of poisonous plants, even for a layman, because many cases of poisoning can be avoided through such knowledge. Let me briefly run through a few of the plants of Iowa that are poisonous.

Poisonous substances not only occur in the flowering plants, but we find bacteria and some of our fungi cause poisoning. Fungi are low organisms; they are not green in color, and are found at times growing from decaying wood, or other decaying substances as corn, silage,

* Broadcasted over Station WOI, December 20, 1927.

mouldy hay, etc. The bacteria are small unicellular organisms. Let me just mention a few cases; for instance diphtheria produces a poisonous substance from the organism. Many other bacteria that are not parasitic produce poisonous substances, which during this growth produces powerful toxic substances. Of course I want to mention the bacillus that produces botulism. This organism is found in contaminated meat, fish and other foods. The products from the growth of this organism are powerfully poisonous.

There are other fungi which are quite toxic, and some of these are found quite

Smartweed (Polygonum) 1, Stem in fruit; 2, Portion of base of plant; 3, Seed; 4 and 5, Sections of seed.

commonly in Iowa. Several cases of poisoning from them have been reported. We have in Iowa a fungus known as the death cup. This plant produces a cup at the base and an umbrella-like cap with a thin veil. This is a rather interesting organism. The toxic substance in this toad stool dissolves the red corpuscles. There is another so-called toad stool fungus, the fly agaric, which too is very poisonous. This organism produces a toxic alkaloid.

The most interesting of all of our poisonous fungi is called ergot. This is parasitic on grains and is often found on rye, wheat, barley and quack grass. The so-called spurred rye-fungus contains several toxic substances and when consumed by live stock a gangrene sets in and circulation is stopped. Thousands of cattle in this country at different times in our history have been affected by organisms. One of the deep seated prejudices against the use of rye is from the fact that persons consuming rye bread in olden times were poisoned from ergot being present in the rye.

There is another form of poisoning in a higher form of plant life, which poisons the skin and is known as dermatitis. Dermatitis is a rather common trouble, and may also be produced by a fungus, but I am now referring to dermatitis produced by poison ivy. Poison ivy has three leaflets. Some persons are quite immune from poisoning from poison ivy, while there are others very sensitive to it. The best thing to do when one has come in contact with poison ivy is to wash with soap and water, which will take up the toxic substance.

The hairs of the nettle plant also produce skin poisoning. We have several varieties of nettle in this state; one is a common weed; another occurs in woods and is known as the wood nettle.

The most poisonous plant we have in Iowa is the cowbane. It grows in marshy places and has white flowers in umbels, large leaves and fleshy bunched roots. This contains a powerful toxic substance and is very poisonous to live stock and to man. The root has a pungent odor and flavor. Several cases of poisoning from this plant occur in Iowa every year, and many cases of live stock being poisoned from this source are also reported. Upon consuming this plant the animal passes from one convulsion into another. This

plant is easily recognized because it grows in low ground and has white flowers. It is commonly called wild parsnip, a name that should not be used. The true wild parsnip has yellow flowers and a conical root. This plant is not poisonous.

Another plant of this toxic family is the poison hemlock. It also has white flowers, but has finer compound leaves, and has the odor of corn that mice have run over. The plant contains a very poisonous alkaloid.

There are other poisonous plants of this carrot family in Iowa, as the jimson weed, which are very common. These grow in abundance in yards and waste places. Cattle carefully avoid them. They contain poisonous alkaloids, and cattle are poisoned some times when they consume any of this weed. The seed is some times eaten by mistake and fatal cases of poisoning are recorded.

The black henbane has a yellowish white flower. It is a member of the same family. This too is toxic like the jimson weed. The leaves of the black nightshade are poisonous.

We have some poisonous plants of the lily family. One of these is known as the bunch flower. This is a native plant related to the camas plant. It occurs in the eastern part of the state near Belle Plaine and southeast. This plant contains a poisonous substance similar to that found in green hellebore.

We have an interesting poisonous plant in the western part of the state known as the rattle box, which is poisonous to horses. This is a member of the legume family. Experiments were made by Dr. Stalker many years ago. He determined its toxic nature. We also have a loco weed in the western part of the state along the bluffs of the Missouri river. I have, however, never heard of any loco poisoning in Iowa.

Frosted sorgum and frosted soudan grass; also frosted rape are poisonous.

VETERINARY PRACTICE 35 YEARS AGO AND NOW

In this discourse if the reader will bear with me, I wish to describe some of the college teachings and practice of veterinary medicine some thirty-five years ago, as compared with the present day teachings and practice; or probably a better heading would be, the heroic treatment of those days and the reformed treatment of today. However, thirty-five years ago, veterinarians had about quit bleeding the horse until it fell but they still used some pretty rough treatment, such as the badly handled firing iron and probang.

While I was a senior student of the New York College of Veterinary Surgeons, the house surgeon made the remark: "Give me a good set of firing irons and a bottle of turpentine and I can do almost all it is necessary to do in the successful practice of the veterinary art." After leaving college and settling down to practice in a stock raising community in the black land belt of Illinois in 1892, I hewed strictly to the line of treatment I had been taught while in college. I fired everything from a wind gall to a bowed tendon and a red iodid of mercury blister reinforced with turpentine was used freely over the fired surface.

However, in time I began to ask myself why I used such heroic treatment. The result was that except for spavins, I haven't fired a horse in twenty years. Instead of firing, I have used a good blister, of which there are several ready made ones on the market. I prefer cantharol put up by the Abbott Laboratories. While there are probably others just as good, I have had such good results from this blister that I have had little inclination to try others.

Cuts and wounds in the older days were washed with strong bichlorid of mercury solution, which coagulated the albumin of the tissues so firmly and deeply that it took several days for a scab to come off and delayed healing just that long. A few years later came creolin with water which made a nasty mixture

and was too irritant for a uterine injection and for several other things for which it was used at that time. Fistula was mostly treated with strong caustics such as arsenic and the strong acids which caused the sloughing of as much sound tissue as it did diseased tissue.

Colic Treatment in the Nineties

Acute indigestion and the different colics were treated by large draughts out of a long necked bottle. The drenches consisted of a quart of linseed oil, one ounce of turpentine and one ounce of spirits of niter. The horse's head was pulled up by running the halter rope over the limb of an apple tree. It was often pulled so high the animal could not or would not swallow and the drench ran down the trachea causing strangulation. Usually a part of the drench ran down the veterinarian's shirt sleeve.

The usual treatment for pneumonia was large doses of carbonate of ammonia and quinine, which were incompatible, given in the same powder. The sides of the animal were blistered with white liniment, mustard or cantharides.

Laminitis, which we now know to be an auto-intoxication, was treated by standing the animal in water or a clay puddle for several hours, with the administration of large doses of saltpetre, even to the point of causing nephritis.

A Search for Better Methods

Finally the absurdity of it all was too much for further negligence and I began to look around for a more successful line of treatment, and one with less discomfort to the patient. I discarded a great many of the remedies which I was using at that time. However, I never used a new remedy until I freely consulted old medical literature as well as new. I found that a great many drugs valuable for treating the sick and afflicted of olden times had been discarded because they did not know how to use them. They were used in doses that were too large; crude drugs were used where their concentrations should have been employed.

I don't wish it to be understood that I have abandoned all the remedies I was taught to use while in college. One agent I use as much today as when I first left college, and have yet to find anything superior to it for bony enlargements such as spavin and ring bone. This liniment is composed of only two ingredients, tincture of iodin and oil of cajuput, equal parts. I have used this liniment time and again when it did the work without having to fire or even to blister the animal, and later I found by adding eight ounces of wood alcohol to four ounces of this mixture, making a twelve-ounce mixture, it makes one of the best liniments for fresh strains with swelling I have ever used.

Wound Treatment at Present

As a traumatic wound is generally smeared with dirt and sometimes grease, when the veterinarian is called, it must first be cleansed. For this purpose, nothing excels acetone. Pour it into the wound and swab the surrounding skin with it. It does not smart as much as alcohol does. Having cleansed the wound, some antiseptic is applied. For this, I used iodized echafolta 25 per cent solution.

Having rendered the wound as sterile as possible, the question arises as to what dressing to use. Many veterinarians use dry gauze; this sticks to the wound as a rule, and has no antiseptic value. Wet dressings are sloppy, cold in winter, soon dry out and on the whole, are unsatisfactory. Dusting powder acts as a foreign body.

Some years ago I began to cast about for some ointment which would be satisfactory for dressing wounds. I wanted something which would be somewhat antiseptic, non-irritating, non-poisonous and would promote healing processes. After trying quite a number of mixtures, I finally settled on a mixture of resorcin and oil of eucalyptus in vaseline.

Recorcin iii℥,
Oil of eucalyptus ii℥,
Vaseline iv℥.

I have used this dressing for wounds for

the past twenty years with great satisfaction, not only to myself, but to my clients. After painting the wound with iodized echafolta I smear a little of this mixture on the wound. If the wound is on a part of the body that can be bandaged, I smear the ointment on gauze and apply to the wound, then bandage.

In wounds already infected, this ointment may not be sufficiently antiseptic to subdue the infection, and in this case, I use a ten per cent thuja ointment for a few days till the infection is conquered. Pain and tenderness always mean infection; even an extensive wound is not particularly painful unless it becomes infected.

In case of infection with inadequate drainage, free incision of course, is indicated with appropriate dressings afterward. For the lymphangitis which sometimes accompanies infection, painting the skin with oil of cloves one part, tincture echinacea 3 parts, and dressing with libradol (composed of lobelia, tobacco, sanguinaria, ipecac, dracontium, capsicum melaleuca and laurel-camphor) or ichthyol ointment is very effective.

A few words about resorcin. This agent was first separated from galbanum resin and it has also been extracted from ammoniacum guaracum, asafetida and other vegetable resins. It is a diatomic phenol. This natural resorcin was formerly much employed internally as an antipyretic and antiseptic. It was especially esteemed in the treatment of fermentative dypepsia and gastric ulcer.

Then came the synthetic chemist and in his hands, resorcin became metadihydroxybenzene produced by the reaction of fused sodium hydroxid upon metabenzene disulphonate; and this is the only "resorcin" now on the market. It is quite toxic, producing convulsions when used internally. It is used principally in so-called hair tonics, and to remove epiderm scales in chronic skin diseases. But as an internal remedy, the synthetic chemist ruined resorcin.

The reader will please permit me to introduce a little homily at this point. Thomas Bodley Scott, in his book "Modern Medicine and Some Modern Remedies" published in 1916, says: "The effects of the plant remedies are still often a matter of doubt, though the standardization of tinctures and the extraction of alkaloids have put things on much surer ground; these remedies though very often useful—some of them indeed being seemingly indispensable—will eventually, I think, lose much of their prominent position for the reason that they are foreign to the animal system. The inorganic remedies come under rather different heading; many of them, like iron, arsenic, iodin, potash and soda in a measure can be regarded as body foods; but the great future, I think, belongs to the organic animal remedies, to the ductless gland extracts, and to organic chemistry."

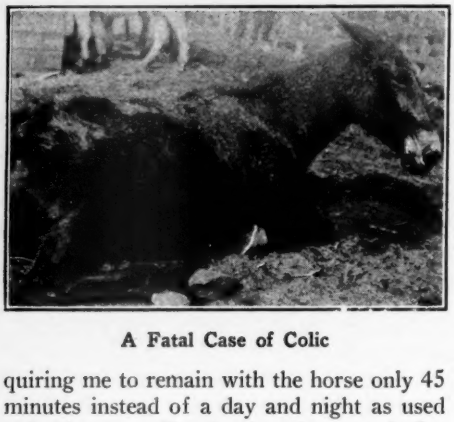
Synthetic resorcin is one answer to this. If the organic and synthetic chemist is only given a chance, Dr. Scott's prognostication will doubtless come true. And then, after the "vegetable remedies" come out of a retort, the "ductless gland extracts" will also be made synthetically and will lose out in professional esteem, and the "pharmacopeia" become an appendix of the trade lists of the manufacturers of explosives and dyestuffs, and "official remedies" be listed under "by-products."

Doubtless, Doctor Scott would not list as "constituents of the flesh and blood" such agents as mercury, silver, gold, bismuth, bromin, copper, magnesium, manganese, lead, and zinc, yet they are useful remedies; he would hardly claim that chemically made glucose or benzosulphinid (saccharin) are as available as food as is natural sugar; and he must admit that all drugs, except food drugs, are "foreign to the animal system," even the ductless gland extracts from the sheep to the system of man. Bacteria and tapeworms are also foreign; and how is one to meet the indications they precipitate unless with some "foreign" substance? Let us keep our plant remedies natural instead of synthetic and credit the work of the organic chemist on its own status—useful, but productive of remedies also "foreign to the animal system."

The conditions described above is why I have quit resorcin as an internal remedy, however I still use it externally as I do synthetic salicylic acid. This was formerly made from oil of wintergreen and was a good internal remedy.

Treatment of Colics

For colic in the horse I mix one dram, fluid extract of nux vomica with two drams, fluid extract colocynth and four drams of dioscorea, add one ounce of water and give with a two-ounce dose syringe well back on the tongue; and instead of part of it going down my shirt sleeve it all goes down the esophagus. This I repeat every fifteen minutes until the horse is relieved which very seldom takes more than three doses, requiring me to remain with the horse only 45 minutes instead of a day and night as used to be the case. For the dog, the prescription as given in the November issue of VETERINARY MEDICINE, page 466, is used.



A Fatal Case of Colic

Treatment of Laminitis

Laminitis is mostly treated by elimination, not large doses of salts or oil, but something to act on the liver. I usually use a capsule of aloes four drams, juglandin and chionanthin of each two drams. This fills a No. 10 capsule. This I give every twelve hours till free action of the bowels has occurred. If I want a stronger laxative than the above capsule, I used Lloyd's rhamnus californica in one ounce doses every three hours giving it in a little water, with a dose syringe.

There are a great many other ailments that I treat quite different now from the way I used to treat them thirty years ago; but I would like to hear from some of the other older practitioners, probably they could give some lines of treatment that the rest of us had not thought about and would like to have. Let us hear from you.

Mobile, Ala. G. W. Browning.

FOREIGN BODIES IN THE MOUTH IN HORSES

1. Some years ago, I was called 135 miles to see a young horse, very thin in flesh and ravenously hungry, yet unable to eat. The case had been under the treatment of another veterinarian for a number of days. He had diagnosed the trouble as some "new disease" with which he was unacquainted.

A careful examination revealed the orifices of the sublingual salivary ducts on both sides tightly wedged with tickle grass, the wads of grass being as large as hulled walnuts. These were removed and a prompt recovery followed.

2. While practicing at Colfax, Illinois, a horse was brought to me that was unable to eat and apparently could not drink either. At least, he experienced much difficulty in drinking. This animal had been under the care of another veterinarian and among other treatments, had had its teeth floated without relief.

I found half of a split corn cob tightly wedged between the upper molar arcades and nearly buried in the hard palate. Because the security with which it was wedged in and the swelling and extreme soreness, the cob was with difficulty removed. The recovery was uneventful although the animal had a sore mouth for a couple of weeks.

3. A similar case that had also been treated unsuccessfully by another veterinarian was presented by a horse brought to me not with a foreign body in the mouth, but with a normal body in a foreign location.

This horse had two molars, one on each side, that had turned sidewise and grown into the hard palate until they practically touched one another in the center.

Grave injury had been done the soft structures and the bone, and severe inflammation set up. The animal was weak from inanition.

The misplaced teeth were extracted. Prompt recovery followed.

Port Byron, Ill. L. C. Hull.

Paris Dog-Show

An Innovation, The British Bull-Dog, from Mont Blanc
By Captain GEORGE CECIL, Paris, France

Held in a Picture-Gallery

UP till recently, the Paris Dog-Show was held in the Tuileries Gardens, the long-suffering animals being chained to posts, and under a blazing sun. From time to time, an unhappy dog would collapse, and the veterinary-surgeons and the kennel-maids in the adjacent infirmary were kept busy attending to the victims of the committee's thoughtlessness. By degrees, those who controlled the destinies of the show yielded to the dictates of common-sense, and today the vast spaces of the Grand Palais, where, at other periods of the year, impressionist pictures are exhibited, resound to yapping and barking. Artists and sculptors profess to be scandalized at, what they are pleased to term, the desecration of art's hallowed abode. Put the spectacle of a well-bred tyke being infinitely preferable to that of a ridiculously inferior work of (reputed) art, no intelligent person takes these cranks seriously. Holding indignation meetings amongst themselves, and toying with untidy manes and matted beards the while, the malcontents curse every dog and exhibitor in France. No amount of cursing, however, will convince the landlord of the palatial building that he is justified in refusing a good "let." The annual dog-show puts many francs into his pocket: he is contented.

The show, which ushers in the holidays, is well arranged, since those responsible for it occasionally visit England, where, they (very properly) believe, intelligence enters into the scheme of things. The *voyageurs,* on their return to Paris, set about perfecting the arrangements which at the previous year's show were considered to be the last word in perfection.

The Pariah Vetoed

Almost every type of dog in all the wide world of assorted dogdom was on view. Indeed, one particularly enterprising member of the committee who, in his youth, had toured India, proposed that a class should be thrown open to the humble pariah. "Let us," quoth he, "invite the Rajahs of that great Eastern Empire to send their famous and favorite pariahs. The compliment will doubtless be considered touching in the extreme."....Fortunately, the advice of a retired Anglo-Indian official, resident in Paris, was asked, and he, with more tact than is possessed by the whole Corps Diplomatique, pointed out that the animal in question, being of the lowliest degree imaginable, was neither tolerated by Rajahs nor suited to exhibition purposes. ....The French dog-fancier bowed to his informant's superior judgment.

The British bull-dog, though comparatively rare in France, was to be seen, and opinions were divided as to whether it could give points to the native variety, cast-iron patriots declaring in favor of the last-named. By way of preserving the balance, the most rabid partisans of France are glad to possess British bull-dog pups, giving as much as 3,000 francs for a promising specimen. They also pay highly for the privilege of possessing an exceptional fox-terrier, many of which were exhibited. One of these expensive animals (a prize winner) changed hands for 16,000 francs last year, and 20,000 has just been refused for it. The English bob-tail, which has become very popular in Paris, was greeted with a chorus of dramatic admiration; the black and white French spaniel and the funny little black cocker, whose ears almost touch the

ground, drew from the spectators exclamations of delight. The special exhibit of deerhounds, belonging to the pack with which the Prince of Wales recently hunted, had the attention of *"les* sportsmen."

Handsome and intelligent Alsatian wolfhounds and *chiens policiers* by the dozen were shown.

Sad and Chastened

A curious-looking Belgian wire pom had, as the vernacular puts it, much success, the French-bred varieties coming nowhere near it, while many an airedale, collie, Irish-terrier (France is full of them), greyhound, whippet, Yorkshire-terrier and pointer made it difficult for

Boston Terrier Owned by Dr. C. H. Reid, Hollywood, Calif.

the judges to arrive at a decision, so perfect was the make and shape. There were very few Skye-terriers, bull-terriers also being sparsely represented, these breeds not having secured the popularity to which they are entitled. On the *chacun a son tour* principle, their turn may come; let some alluring music-hall actress plump for a Skye, and the dealer's fortune is made. What, pray, does commanding woman not accomplish?

To large dogs there was no end. Newfoundlands, St. Bernards, mastiffs and borzois (these were particularly fine) had been sent from all parts of the country, while shooting-dogs of every kind filled the benches. It was observed that each wore a sad and chastened expression. Possibly they pined for the fresher air of the mountain and field?....

Luxurious!

Several *dachshunds* were shown; but their sinuous proportions have little power to charm the Parisians. Since the late war anything German is anathema to the French; consequently, the *dachshund,* though born and bred in France, and as Gallic in thought and behaviour as any dog of the country, is regarded with cold looks. Foreign *chiens de luxe,* however, are welcomed, fabulous sums being paid for them. A Pekinese, valued at 25,000 francs, was on view; the pick of the toy-Yorkshires cost its gratified owner a trifle of 18,000 francs, and a King Charles topped this figure by 2,000 francs. A brace of pugs (France does not greatly appreciate the breed) were admired by the British colony in Paris; and a group of Italian greyhounds, belonging to an operatic star, enchanted the lady's admirers —probably on the "love me love my dog" principle. Only two of the animals came up to show form, the condition of the others suggesting that a kind-hearted mistress had systematically pampered them. Too much cosseting and too many bon-bons.

Although there are fewer dogs in France than there were ten years ago, the figure being approximately 2,800,000 compared with the pre-war 4,000,000, the show did not lack entries. And, what is particularly gratifying, they came from the most remote parts of France, Northern Lille, Southern Nice and the Far-Eastern Swiss frontier sending their contingents. One animal, a remarkable looking bob-tail, was despatched by a farmer living high up on Mont-Blanc. Quite the sportsman....

SEPTICEMIA AND RHEUMATISM IN MONKEYS

Until recently my acquaintance with the simians was very slight, having amounted to but an occasional handshake with a few of the most friendy ones I had met in my travels.

In December, 1926, I became associated with a pet store proprietor, who also deals in and exhibits wild animals, birds and reptiles. Then my experience with monkeys began. I will report some of my "monkey business."

A female rhesus, age unknown. She was given to the dealer by a New York importer, who told him that she couldn't possibly live, and that she "sucked herself." When I saw her she was very weak and emaciated, would not eat, and had a temperature of 98° F. There was a profuse muco-purulent vaginal discharge, and she was continually licking the vagina. I thought there was a chance of saving her and started giving her tablets of triple arsenates of I. Q. and S., with a five-hundredth of a grain of the latter, and for a while they seemed to brace her up, as she commenced taking small amounts of fruit. We placed her in a dog carrier and set it right alongside of a steam radiator, as I hoped the warmth might do her good. I planned to commence irrigating the vagina with warm permanganate solutions, but she fooled me and died on the third morning under my care, proving that the importer was a better prophet than I. Upon autopsy I found two punctures of the vaginal wall, which had apparently been made by the introduction of some sharp-pointed instrument into the vagina, from without.

A male spider monkey, a household pet, had become afflicted with the wanderlust while there were about two inches of snow on the ground. He had climbed out of a window and been captured about two blocks away from home, while walking through the snow. I was called the following day, and found him very sore and tense in the lumbar region, unable to stand erect, and refusing to take food.

Diagnosis: Lumbago or rheumatism as a result of exposure. He was put on a mixture of equal parts of Elixir Saw Palmetto Comp., wine of colchicum seeds, and syrup, one teaspoonful three times daily, and had his back rubbed with chloroform liniment morning and night. Recovery was complete in three days.

Newark, N. J. M. J. Hughes.

FOREIGN BODIES IN THE MOUTHS OF CATS

I was called to see a half-grown kitten that had, up to the time of my visit, been given two overdoses of castor oil, and two doses of a proprietary worm capsule, but with no improvement in her condition. The history was that she had first been noticed acting sick by one of the colored maids, who claimed she saw the kitten coughing, and that there was a red worm (?) protruding from its mouth, but that the cat had not been able to cough it up, and had swallowed the worm finally. From that time until I was called to see it, the kitten had been continually retching, had taken no food, and but very little water.

Upon examination I found the patient very weak, intestinal tract practically empty, abdomen tucked up, hair around anus soiled as a result of superpurgation. No one had examined the feces to see whether or not worms had been passed. I did not take the kitten's temperature. I did not know whether or not the worms had been the cause of the cat's original trouble, but attributed most of the weakness I saw at the time to the castor oil and proprietary worm medication.

The continual gagging and retching, however, led me to suspect the possibility of a foreign body in the esophagus, so I passed the probang which I use on cats and small dogs. It is an ordinary human throat swab, procurable in practically any drugstore, and consists of an ordinary piece of steel wire, similar to baling wire, but more pliable, having a camel's hair

brush at one end and bent into a ring at the other end, to serve as a handle. The brush is lubricated in vaseline, preferably, or water in a pinch, and it is a very simple matter to pass it into the stomach of either the cat or dog. I am never without one, and find it to be a very useful instrument, if for no other reason, just to relieve the anxiety of the nervous client who suspects there's a "bone in the throat."

My probang met with no obstruction, so, I concluded the worst trouble with the cat to be the too ardent medication by the well-meaning owner, a member of the fair sex. Making a guarded prognosis on account of the animal's weak condition, I suggested forced feeding with a little warm milk three times daily, and advised that the cat be kept where it was warm to keep up her strength. For medication I left tablets containing one-half grain each of bismuth subnitrate and cerium oxalate with one twenty-fourth grain of procain to be given every four hours for the first day, and three times daily thereafter. I left also small triple arsenite tablets containing one five-hundredth grain of strychnin, to be given morning and night. I told the owner to watch the cat closely for the next two days, and if there was no improvement, to let me hear from her again, collected my fee and departed. Three days later, I heard by telephone from the owner that, although the kitten seemed somewhat brighter, it still continued to gag, and persistently refused to take any kind of nourishment. Upon my arrival at the house, the owner of the kitten described a new symptom, which she interpreted as a toothache. The cat was continually poking at its jaw with its right foot. This gave me my cue to the correct diagnosis, and subsequent cure of the patient.

I have found that whenever a cat or a dog persistently gags or retches, and repeatedly pokes at the jaw with its foot, there is almost invariably a foreign body somewhere in the oral cavity. It may be only a thorn or splinter, or it may be a large piece of bone between two molars, or it may be an elastic band around the tongue or a tooth, but *look inside of the animal's mouth,* when it shows these symptoms.

A close scrutiny of the inside of the oral cavity disclosed the point of a needle protruding from the lower half of the posterior end of the tongue. This was easily removed with the aid of a small artery forcep, and trailing on behind it came about five inches of white thread. The thread, probably covered with blood, was probably the "red worm" that the maid had seen on the first day that the animal became sick.

I had the patient force-fed as before, increased the dose of triple arsenites to three tablets instead of two, let the punctured wound in the tongue look after itself, discontinued the bismuth, cerium and procain, and the kitten is alive and well today in its home at Nutley, a suburb of Newark.

Newark, N. J. M. J. Hughes.

RUBBER BANDS ON SMALL ANIMALS

To the small animal practitioner here in the east, elastic bands are presented for treatment, or rather for removal quite often. During the years 1921 and part of 1922, when it was my good fortune to have been the assistant of Drs. H. K. Miller and C. P. Zepp, at the New York Canine Infirmary, and later in 1922 and part of 1923, while I served as veterinarian at the Bide-a-Wee Home for Animals in New York City, cases in which rubber bands on various parts of the anatomy of small animals were encountered with almost unbelievable frequency. They come to us in a variety of sizes, and in several different locations. The favorite place to the torturers who place them on the animals is around the tail, but they sometimes come around the leg, around the ear, the entire lower jaw, the tongue, the teeth, or anywhere else that the ap-

parent saddist or mischievous child may pick to put them. They form a perfect tourniquet, and unless removed before the lapse of many days, will cause a complete slough of the organ or appendage upon which they have been placed.

Two cases that I had had since coming to Newark were around the lower jaw of a male shepherd dog, and around the left hind leg of a maltese cat. The former was the house dog at a palace of joy where the juice that once could stimulate, or inebriate, but now more often produces toxic symptoms, is dispensed at fifty cents a throw. The proprietor thought that somebody had apparently cut his dog with a sharp knife, as the band had cut into the flesh so deep that it was no longer visible, save directly under the tongue, where the inferior maxilla is very close under the buccal mucus membrane, just posterior to the lower canine teeth. I removed the band, bathed the wound with a pine oil solution, and prescribed daily swabbings with mercurochrome solution. The case made a good, uneventful recovery, but the dog has an ugly scar completely around the lower jaw that will be there till Kingdom comes.

The cat case was brought to my office by a rather portly lady who conducted a rooming house. The cat had commenced walking lame the previous day, and she suspected that one of her roomers had kicked it on the leg, as he had always seemed to bear considerable antipathy toward it. My examination disclosed the closely fitting tourniquet around the left leg, just superior to the tarsal joint.

The treatment was the same as that given the shepherd dog, but I do not know how the case terminated. The last I saw of the lady, and the cat, were the two of them going out through the office door, the former vowing vengeance against the man she suspected of having played the trick. I fear that he may have had to visit his own physician that night, and if he was guilty, I hope he did.

Newark, N. J. M. J. Hughes.

ECLAMPSIA IN THE COW

As I don't remember having seen anything about this condition in print, I thought I would send in a report as I have met with a few cases this season. At least, that is what I diagnosed them to be, probably for want of a better name. I find that the conditions under which this disease occurs is practically the same as parturient paralysis.

The main differential diagnostic symptoms are, absence of coma, temperature normal or a little above, ability to swallow, extremities not cold, a cheerful expression and a constant desire to get up which, however, she is unable to do. These cases respond to the regular line of treatment, I believe a little better than does a regular case of parturient paralysis, as I have been able to cure about 90 per cent of them while in the regular form, my records show about 75 per cent recovery.

Winfield, W. Va. Rembrandt Morgan.

Reminiscences of Detmers *Et Alaii*

Your biographical note of Doctor Detmers in the January number of VETERINARY MEDICINE reminded me of an interesting evening spent with him and Doctor Paul Paquin.

In the Autumn of 1888, while a student at the Chicago Veterinary College, the U. S. Livestock Sanitary Association met in Chicago (I think under a different name.)* Dr. Paul Paquin, state veterinarian of Missouri, was secretary, and as he had previously practiced in my home town, he asked me down to the meeting. My recollection is that there were not enough present to have an evening session, so Doctor Paquin, Doctor Detmers and the writer adjourned to a basement establishment where liquid refreshments were dispensed, and while Doctor Paquin sipped *vin rouge* and Doctor Detmers drank beer, I listened to a

* The official name of the organization was The National Veterinary and Sanitary Association. The U. S. Live Stock Sanitary does not claim to be a lineal descendant of that association nor does it number its annual meeting to include those of the former association. In 1897 The Inter-State Association of Live Stock Sanitary Boards was organized. At the 13th annual convention of this association held in Chicago September 13, 14, 15, 1909, the name was changed to the U. S. Live Stock Sanitary Association. more recently propositions to change the designation to "International" instead of "U. S." and to "American" instead of "U. S." were both voted down.—Ed.

most interesting and entertaining discussion of the cause of hog cholera and a verbal scientific annihilation of all research workers who did not agree with Detmers, particularly Doctor D. E. Salmon, chief of the recently organized Bureau of Animal Industry of the U. S. Department of Agriculture.

The next day I told Doctor F. S. Billings, who was at that time lecturing at the Chicago Veterinary College, of the conversation. He swore picturesquely, snorted like a war horse, and expressed great regret he was not present to take part in the fray.

N. S. Mayo.

No. Chicago, Ill.

ARTICULAR RHEUMATISM IN A COW

I have a Holstein heifer bought at a sale at Minneapolis which I have had considerable trouble with. She calved prematurely last June, retained the placenta and developed a very bad case of pyometritis. She nearly died. She recovered however, but now she has developed what I would call an articular rheumatism.

About six weeks ago, it seemed as if the upper part of the udder was swelling. It seemed as if there was a division line between this swelling and the mammary gland. This swelling is increasing in size and now it must weigh about three or four pounds, and it is of the shape and consistency of a kidney.

I had thought that it was an infected lymphatic gland but do not know.

I will thank you for any advice you may give me.—J. B., Wisconsin.

Reply: From your description I suspect that the swelling that you describe is an enlargement of the supra-mammary gland and naturally the first thing we think of is that it is tuberculous, so before doing anything else, I suggest that you apply the combination tuberculin test to the animal and if the gland seems at all fluctuating, indicating fluid or pus in it, I would draw some of the contents out into a sterile syringe and send it to a laboratory for microscopical examination and guinea pig inoculation.

If all of these tests prove negative, that is, not tuberculous, then I would either open it, if soft and drain it as you would any abscess, or remove it surgically, or if hard, reduce it with absorbents. The latter procedure, however, does not seem advisable on account of the size unless there are objections to removing it.

If the cow is not tuberculous, her rheumatic condition can be positively improved, or entirely corrected, by feeding her a properly balanced yeast and mineral mixture. It is rather a common experience in our practice among purebred cattle to find heavy producers "going to pieces" so to speak, losing flesh, and developing a porous condition of the ends of the long bones which for want of a better name is styled articular rheumatism or rheumatic arthritis. For years, we have been able to correct this condition or relieve it entirely by adding a proper vitamin and mineral mixture to the ration and allowing the animals a comfortable stall or paddock.

I would be greatly interested, Doctor, in learning the results of your tuberculin tests and bacteriological examination.—J. F. D.

White snake root, *Eupatorium urticaefolium,* contains a toxic substance called tremetol. This substance may be excreted in milk and occurs in butter. This product disappears from the plant when it is dried. When the green plant milk, or butter containing tremetol is ingested by cattle, sheep or man, acetone is exhaled, hence the peculiar odor associated with animals and man affected with milk sickness.

Efficient pasteurization renders a questionable milk safe for human consumption, however commercial pasteurization may not be efficient; furthermore pasteurization does not insure against further contamination. This latter important factor is sometimes overlooked.

Reviews and Abstracts

By D. M. CAMPBELL

The Prevention of Shipping Fever in Horses

If further and more extensive use confirms the conclusions drawn by Northcutt[1] as to the value of iodin in the prevention of influenza in horses passing through the public markets, the discovery will prove most important to the horse industry and to industries depending upon the horse for motive power.

At British Remount No. 3, a trial was made of the intratracheal administration of iodin for the prevention of influenza and catarrhal diseases to which remounts are subject on being sent to the army.

Previous to the use of this method practically all remounts received at this station suffered from these diseases. It was a common occurrence to find 15% to 20% of the remounts suffering from one or more of the catarrhal equine diseases upon their arrival at the station. Further cases appeared from day to day until within a month virtually every horse was affected. In short, the experience in the British Remount No. 3 was typical of the experience of our own army remounts and of all young and unacclimatized horses passing through the public markets or public stock yards.

Of 200 animals given the iodin treatment at the time of shipment, only 20% developed the disease within 10 days and a further 10% within a month. Of 20 controls with these 200 treated horses, 16 (80%) developed the disease within 10 days and two additional animals came down within a month.

In the treated animals that did develop the disease the attack was milder and of shorter duration than in the controls.

The treatment was given at varying periods of incubation. The best results were attained in the animals given the treatment soonest after exposure.

The prophylactic treatment consisted of the intratracheal injection of 5cc of a weak solution of iodin (iodin 1, potassium iodid 5, distilled water 200) under aseptic precautions.

The injection is made with a hollow trocar with the distal opening one-half inch from the point of the trocar. The trocar is attached to a hypodermic syringe and inserted between the cartilage rings. The solution is warmed before injecting.

One can but doubt that further use will bear out the promise of this limited test, but the cost of the treatment is infinitesimal compared to the result desired and by giving the injection at the time of mallein-ation there is little trouble or inconvenience connected with it. It will be given further trial.

[1] An Attempt at the Prevention of Equine Influenza and the Catarrhal Group of Equine Diseases in General, by Capt. C. S. Northcutt, Royal Army Veterinary Corps. *The Veterinary Journal* (London), Vol. 83, No. 10, October, 1927, pp. 508-11.

Anthelmintic Procedures in the British Army

As all those of you with army experience are well aware, every unit of the army has a few horses whose condition is not all that it might be and which are at the same time no credit to the unit itself, and to the veterinary officer and the unit commander, a disappointment.

The causes of unthriftiness in horses are many and may I make it clear to you at once that at Aldershot we do not ascribe every case of debility or poor condition that we meet with to the presence of entozoa. What we *are* saying, however, is: "To what extent can this poor condition be attributable to the presence of intestinal parasites and to what extent can we employ our laboratory in the diagnosis of the condition?"

The following is an outline of what we

[2] Abstract from a discussion of Intestinal Parasitisms in the Horse and Its Treatment, by Major C. Davenport, R. A. V. C., Aldershot, England. *The Veterinary Record*, Vol. VII, No. 44, October 29, 1927, pp. 947-55.

have been doing. The poor horses in the command have been marked down. Their droppings have been examined for the presence of parasitic ova and, where these have been found to be numerous, we have had the case transferred to the hospital. In the hospital these horses have been weighed and then fasted for sixty hours. At the end of this time the following alterative and anthelmintic draught has been administered *via* the stomach tube:

℞ Ol. chenopodii, 4 to 5 ℥.
Formalin, 1 ℥.
Ol. tereb. 1 to 2 ℨ.
Pulv. aloes, 4 to 5 ℥.
Ol. lini, 1 to 2 pints.
Sodi chlor., 6 ℨ.
Water, 2 to 3 cong.

Purgation follows and may persist for two days, after which the normal appetite soon returns. When the horse shows a definite improvement in condition (which generally occurs in three to four weeks) the feces are again examined and if they are negative to parasitic ova (as they invariably are) then the horse is again weighed and discharged to duty.

So far we have dealt with 159 horses in this manner. The average number of days under treatment has been 29.94, and the average gain in weight during this period has been 38.61 lbs. We find that the improvement in condition is maintained and is rapid and permanent. Possibly some of you may ascribe these very satisfactory results more to the value of the rest, extra feeding and attention, and the alterative nature of the draught than to the elimination of the intestinal parasites. We are not prepared to agree to this. Rest, extra feeding and the administration of aloes has been tried many times in the past without the same success that we are now getting. We are still in the experimental stage only, but I would like to say this—the Units of the Aldershot command are at present showing a lower proportion of poorly-conditioned animals than I ever remember before and that this very satisfactory state of affairs has followed a more general employment of anthelmintic treatment.

Symptoms of Cerebritis Due to Intracranial Tumors[8]

A standard bred mare, bay, 8 years of age, in service for five years, worked very little. Pathological history includes a typhoid fever very grave in character at the age of three. On Jan. 29, 1927, the animal showed increased somnolence. The owner thought her to be asleep. He attempted to use her for a trip of five miles, but had to leave her at a stable when half that distance had been covered, since the somnolence had changed into a torpor. This increased until the following day when an exciting stage commenced. The mare lifted her head very high, she rushed against the wall with it, she was covered with perspiration. Complete amaurosis was noted and the respiration was very much increased. The pulse was strong and fast. The heart could be heard at some distance, the temperature was 38° cent.

The diagnosis was undecided between congestion of the brain and a brain tumor. The animal was bled eight litres and ice was placed upon cranium. Improvement resulted. The next day the animal drank and rested quietly at all times. From the first to the sixth of February everything seemed to be all right once again, the animal partaking of food and drink. On the fifth her caretaker stated that in going out of the stable the mare threw her head violently into one of the door posts, hurting herself severely. The diagnosis of a brain tumor was more and more indicated towards the 6th when the excitement became very much increased again reaching its maximum toward the evening at about eight o'clock. The mare was violent at this time, throwing herself about and inflicting severe injuries upon herself, only to fall down completely later on.

On the seventh the head was held very erect again and the animal threw itself against the wall at intervals. Slaughter was advised. On the eighth there was quite an improvement and the animal was led to the abattoir without any trouble.

[8] Cholesteatoma of the Internal Meninges at the Site of the Pons, by Ball, Perriot, Savre and Savre. *Revue Veterinaire et Journal de Medicine Veterinaire*, May, 1927. Abstracted by H. J. Magens.

The anatomical findings: Two tumors in juxtaposition were found. The left one being the larger, ovoid in form, the smaller one of the poles directed forward situated a little over the median line. It weighed 50 grammes. It was six and a half by three and a half centimeters in dimension. The surface of the tumor was covered by small punctuated hemorrhages which also appeared upon section. A very thin connective tissue capsule partly surrounded the tumor and united at the base with one of the meninges from where the growth started. To the right and a little towards the front was a second, smaller tumor, three faced, all other factors being the same. These neoformations are firm enough but upon incision one will notice some resisting spots, indicating some small calcified areas or some masses of cholesterine-crystals. In the course of their development both tumors have left upon the meninges they touched distinct impressions. After the ablation the brain tissue took slowly again its old form, still an atrophy of the tissue was seen causing the symptoms described. In the lateral ventricles the cerebral fluid was normal.

Parabotulism in Horses[4]

The description of parabotulism in horses resembles, in certain respects, parabotulism in cattle, generally known as "lamsiekte." The agents of these two affections are, however, different and the two species of animals have not the same susceptibility to the toxin. Horses will resist a larger quantity of toxin of parabotulism of cattle. The difference of the two agents is attested also by serologic proof. The antitoxin of "lamsiekte" does not protect against the toxin of parabotulism of horses. Then, too, the difficulties in isolating the agent of parabotulism in horses are still another point of difference.

The organism is, we think, properly to be called *Clostridium parabotulinum equi*. The morphologic characteristics and the details of its culture make it resemble the bacillus, Parabotulinum bovis, the agent of "lamsiekte" in cattle. It is not very distant from well-known types such as *B. parabotulinus* (Seddon) and *Clostridium luciliae* (Bengsten).

The toxin of *Clostridium parabotulinum equi* is not found in the corpses of rats in decomposition. Up to the present, we have not found it except in rats which before their death, had ingested active cultures. Besides, horses which had swallowed food fouled by cadavers of rats in decomposition, remained uninfected.

If enzootics of parabotulism break out among horses, they must be attributed to rats occasionally infected, since all rats do not shelter the pathogenic agent. From a prophylactic point of view, it is to be advised that one should consider as dangerous and should prevent the consumption of any product in which any dead animal might be decomposed.

The malady attacks horses and mules beginning abruptly with an apyretic attack of paralysis of the locomotor system and ending, ordinarily in 24 to 48 hours, with death by asphyxia. Recovery may occur, but only after several weeks. The autopsy shows no characteristic lesion. The microbe has been isolated from the dead body of a rat found in a stable where mules had been attacked by paralysis. This organism, cultivated in a pure state, produces a toxin which, injected into horses or administered *per os,* produces an identical infection.

Prevention of Infectious Abortion

A most interesting contribution to this subject was made by Prof. Bang[5] at the Philadelphia A. V. M. A. meeting. It is now more than thirty-two years since the author isolated and first saw the *Brucella abortus* or as it is still commonly called, the Bang bacillus. Since then it has been recognized in every country where cattle are kept in any considerable numbers and generally regarded to be the most important cause of abortion in cattle, by many considered the greatest scourge of cattle.

[4] Abstracted from an article by Sir Arnold Theiler and M. Robinson in *Rev. Gen. de Med. Vet.*, 1927, 36: 193-199, by M. C. Brown.

[5] Bovine Infectious Abortion, by Prof. Dr. B. Bang, Copenhagen, Denmark. *Journal of the A. V. M. A.*, Vol. 25, No. 3, December, 1927, pp. 341-7.

The abort and the uterine discharge of the aborting animal are the principal means of disseminating the infection and contaminated pastures and contaminated feed in barns where abortions have occurred are the principal vehicles for the conveyance of the infection.

The segregation of animals about to abort is the most valuable measure for the protection of healthy animals. The removal of recently aborting animals and disinfection of the contaminated surroundings is likewise a measure of great value.

The bull as a spreader of the disease should not be overlooked for it is possible for him to contract the disease and develop foci of infection in the testicles and seminal vesicles. Precautions should be observed in exposing the bull to infected cows and in breeding healthy cows to a bull that gives a positive reaction to the serological test for contagious abortion.

Immunity to the disease is being carefully studied. It is more important in Europe than under American conditions. The author regards killed bacilli as having little effect in the production of immunity, but live bacilli as being more effective under certain conditions in highly infected herds. The Pennsylvania plan for handling infectious abortion appears to offer promise, where it is practical to apply it.

Accurate diagnosis is the most important factor in handling the disease by the separation method. This can be attained by the use of the serological tests if two negative reactions at least one and better two months apart be required before passing an animal as free from the disease.

A disadvantage to the agglutination and complement fixation tests is that while they will indicate whether or not an animal is infected with the disease, they will not tell whether or not a cow will abort. The test has in this an analogy to the tuberculin test, which will indicate whether an animal is infected, but will not tell whether the animal will become clinically sick with the disease.

Infectious abortion, due to the *Brucella abortus,* is a reportable disease in Denmark and in Norway. Abortion has been found (in Denmark) to be due to tuberculous infection in 2 per cent of the cases of abortion examined. Of these about one in 25 were due to the avian bacillus, the remainder to the bacillus of bovine tuberculosis.

Bovine Tuberculosis[6]

It is practically certain that 30 years ago this Island (Guernsey) was free from tuberculosis. About that time the American veterinary surgeon who had tested hundreds of animals for the States and found no reactors, advised his government that the test was unnecessary and that the Island was free. For some time afterwards the animals bought in Guernsey for America were allowed to be exported without any tuberculin test.

At the early part of this century it was fashionable to send animals to various English shows from which they returned laden with honors and, as we were later to find out, with tuberculosis. This condition went on for some time until eventually a buyer of two heifers insisted on the test being applied, and one reacted. Soon afterwards a number of animals were bought by an American from the same farm and subjected to the test. Most reacted, but the farmer insisted on their being exported to the States, where they were again tested, and those which reacted on the Island reacted there.

Drastic laws were then passed. No animal could, or can now, leave one farm for another without a veterinary certificate showing it has passed the tuberculin test. In the event of a reaction, or even suspicious reaction, the animal must immediately be destroyed or isolated as the case may be and the remainder of the

[6] The Eradication of Bovine Tuberculosis and Johne's Disease From the Island of Guernsey, by Capt. E. J. Laine, M. C., M. R. C. V. S., Guernsey. *The Veterinary Journal* (London), Vol. 83, No. 10, October, 1927, pp. 514-15.

herd tested by the State's veterinary surgeon. All reactors must be destroyed and no animal can be removed from the farm till it has passed the test four months later.

A few months ago similar laws were passed with regard to Johne's Disease and we hope to eradicate this scourge as we have tuberculosis.

The effect on the health of the human population has been astounding; the incidence of tuberculosis falling from 7.8% to 1.7%.

Although free, we still continue the testing as before, and apply all preventive measures just as when the disease was prevalent.

It is obvious that the eradication of this scourge from England must be a greatly more difficult problem, but introducing imperfect tuberculosis laws does not help in the slightest. It is possible that only udder-affected animals give tuberculous milk, but they certainly are not the only ones that transmit the disease through the milk.

As far as I can find, no animal has ever been found with tuberculosis of the udder in Guernsey, but with the eradication of the disease in bovines the existence of the human form has decreased to such an extent as to be unbelievable.

As your laws (in England) stand today, I take it that an animal must be capable of infecting dozens before it can be condemned. We in Guernsey act on the principle that an animal must be destroyed before it can infect another; and indirectly, human beings.

Prophylaxis of Bovine Tuberculosis[1]

When in May, 1924, Calmette and myself made known in the *Annales de l'Institut Pasteur* the results obtained in the laboratory in our attempts at vaccination of bovines against tuberculosis, we expressed the desire that similar attempts should be made in current practice "under reserve of complementary instruction which might be brought to us by the extension of these attempts."

Today the idea of early contamination of new-born animals in infected stables and of the occult tuberculosis which results from it is more and more widespread. The contamination of nursing calves in their contagious surroundings is of the same importance and as dangerous, the chances of infection for the last being more numerous than for the first. Who, however, would dare to doubt in these times the necessity of withdrawing at its birth the new-born animal from its phthisical mother, of prohibiting the milk of this mother for its feeding, of the cow's milk given in replacement?

The anti-tuberculous protection of the young from their birth is the very basis of all prophylaxis.

In man, the results so encouraging obtained by the intervention of the B. C. G. do not weaken the initial, elementary and prophylactic prescriptions.

In bovines some indications should be given to accompany the practice of vaccination in the infected places. From the first day of their life and during the following month, calves submitted to vaccination by the B. C. G. must be withdrawn from all tubercular contamination as to habitat or food. The prescribed treatment includes isolation and healthy alimentation. If, in practice, it is often difficult, sometimes impossible, to isolate adult tuberculous animals, the difficulty is much more easily overcome with the new-born.

A very restricted area will suffice to shelter these small animals. The frequent and thorough disinfection of such a place is relatively simple. In what concerns food, two means are suggested: the boiling of the milk, the most trustworthy method in view of contagion but the least practically to be realized. The second means, less sure perhaps but much more easily used consists in nourishing the new-born animals with the milk of animals not reacting to the tuberculin test.

[1] Abstracted from an article by C. Guerin, in *Recueil de Med. Vet.*, 1927, 103: 400-401, by M. C. Brown.

The fact that a practitioner is called upon to intervene in applying the B. C. G. vaccination implies for him and for the owner the knowledge of a sanitary situation previously studied. In the great majority of cases a general tuberculination has secured a discrimination of animals sick or suspected or entirely healthy. The feeding of the young animals with the milk of these last alone should reduce to a minimum the risks of contamination of alimentary origin.

Necessity brings these precautions in the matter of tuberculosis and serves at the same time the cause of general hygiene so often not understood in rural districts. Many examples drawn from human experience will assist veterinarians in persuading cultivators that the prophylaxis of tuberculosis in the bovine species as in the human species should first be exercised upon the very young; in which they will have again greatly benefited agriculture.

Lamb Losses

Jungherr and Welch[8] find the losses of lambs from two days to six weeks of age to be the result of unfavorable weather conditions at lambing time. The sheep owner recognizes two diseases as causing the death of lambs—"Stiff lamb disease" and diarrhea. The former includes three distinct ailments, umbilical infection, coccidiosis and a braxy-like disease due to *Vibrion septique* infection. The latter, the dysentery, is the far more serious affection, not infrequently causing the loss of 30 per cent of the lamb crop in large bands.

Sheep are maintained in Montana under two sets of divergent conditions, farm flocks and range bands. Protracted wet snows will depress the vitality of lambs even when protected by sheds to a degree that admits of devastating losses from the foregoing diseases. Umbilical infection is common however, only in farm flocks where the lambs are dropped in corrals or sheds almost continuously used by sheep or other animals.

Unlike navel disease in foals and calves, umbilical infection in sheep seems almost entirely preventable by disinfection of the umbilicus when the lamb is dropped. Thus indicating it is not in sheep an intra-uterine infection.

Coccidiosis was present in 80 per cent of several hundred normal lambs examined, but from the enormous numbers of coccidia present in many dying lambs and the absence of other causes that could be incriminated the authors are forced to conclude that the organisms become pathogenic under conditions favorable to it and unfavorable for the lamb.

The onset of the bradsot like disease or braxy, is likewise primarily due to exposure to inclement weather. The authors' discussion will hardly exclude hemorrhagic septicemia, due to the bipolar organism, from the mind of the reader, as being the condition they are describing, yet they adduce considerable evidence that the losses were due to a different organism.

Lamb dysentery was not observed by the authors prior to the lambing season of 1927. It was the cause of very severe losses last spring. *B. coli* and *B. welchii* were found in these cases and the losses attributed to them. Lambs apparently normal at birth were attacked about 12 hours later and seldom lived more than 48 hours after attacked. Up to 30 per cent of the lambs were affected and 90 per cent of those affected died. Infection was apparently due to contamination of the ewe's milk or of the udder.

The principal symptom in umbilical infection, coccidiosis and braxy-like disease was a stiff, stilted, awkward gait. In dysentery, in addition to the diarrhea with yellowish, pasty, fecal discharges, there was extreme depression and early comatosis.

No characteristic, constant lesions were

[8] A Report on Lamb Disease by Erwin Jungherr and Howard Welch, Department of Veterinary Science, Montana Experiment Station. *Journal of the A. V. M. A.*, Vol. 25, No. 3, December, 1927, pp. 317-26.

found in "stiff lamb disease" or any of its divisions. In lamb dysentery, there was an acute enteritis.

Results of Grafts Upon a Flock of Algerian Sheep[9]

By means of a special technic I have succeeded with durable grafts of the genital glands from one animal to another of the same species. The histological examinations, communicated by Mr. Retterer to the Biological Society, have, in effect proved the survival of these grafts for over three years and a half.

The principles of this technic are:

1. Transplantation of the gland in the place designed by nature;
2. Irritation of the surface of implantation by scarification and scratching; the effect being to produce an afflux of blood in order to hasten the growth of vessels of new formation for the humoral nutrition of the grafts;
3. Division of the grafts into thin slices in order to facilitate the humoral imbibition of all the cells.

I have applied this method in the following cases:

a. Upon old animals in which the testicular hormone is deficient;
b. Upon young animals before puberty in which the glands not yet arrived at maturity, do not yet secrete the testicular hormone.

In the first, one obtains a sort of general revivication of the old organism, an augmentation of the vital force and energy and a renewal of the sexual function.

In the second case, an awakening of the hormone by the graft from an older animal. These young organisms are thus endowed with a stimulant hastening development, rendering them richer in flesh and in milk production. Later, their own organs developing, there is notable increase.

Encouraged by the results obtained in my laboratory at the College de France in the two cases, I have wished to extend my experiments to entire troops of sheep. To avoid all criticism and that the results should be controlled by official administration, I went in 1924 to Algiers where the government owns a flock of 3,000 sheep under the care of the live stock inspector of the general government of Algiers, Mr. Trouette.

The grafting of the lambs was made in October, 1924. The livestock service reported the first results in 1926. From the report, I extract the following figures: The average weight of the animals of two years, not grafted, is 61 kg. 300; the average weight of the grafted animals of the same age, is 68 kg. 500. The increase in weight, then, is 7 kg. 200, about 1/8.

The average weight of the fleece of rams not grafted, is 3 kg. 100; for the grafted animals 3 kg. 750, an increase of 350 g, about 1/5.

At the moment of the report, the rams had already procreated lambs which had reached five months of age. These lambs, issue of the grafted animals, had an average weight of 38 kg. 200 while those, issue of the ungrafted animals, weighed 30 kg. 100 showing, in favor of the grafted animals, an increase of 8 kg. 100, more than 1/4.

One year after this report was made, I visited the flocks under the supervision of Mr. Trouette and of the Commandant Cottenceau, director of the live stock station. Out of 11 flocks belonging to the government, two are composed entirely of animals, issue of the grafted animals. 2800 were weighed in our presence; then shorn and the fleeces weighed. The results are approximately the same. The animals, issue of the grafted animals weigh on an average 1/5 more than the animals issue of the non-grafted and their fleece announces an increase of 1/6.

It is, therefore, a constant and general fact: the animals grafted young transmit to their first generation, at least in part, the newly acquired qualities. Without

[9] Abstracted from an article by Serge Veronoff, in C. R. Acad. des Sciences, 1927, 183: 480-482, by M. C. Brown.

pre-judging what might be obtained by grafting the rams issue of the grafted animals, there is cause to confirm that the increase in weight and in wool of this first generation already offers a considerable advantage to the breeders. A ram fecundates an average of 50 ewes. These rams grafted may then assure the fecundation of 5,000 ewes which will give about 5,000 products superior in weight and in wool which may be read as a gain of several thousands kg. of meat and wool.

The wealth in wool and in the meat, in each country, may thus be considerably augmented, thanks to grafted ancestors.

Process for Collecting Blood Aseptically From the Pig[10]

Great difficulties beset investigators in taking samples of blood from the pig aseptically. The thickness of the skin and especially the layer of fat which overlies the vessels, prevent or render very difficult the use of superficial veins. Twice only, on very thin animals have we been able to puncture the subcutaneous abdominal vein.

The conformation of the neck which is extremely short and the deep-set vessels do not permit approach to one of the jugulars or the carotid without causing trouble. This process, applicable when one bleeds a pig white, is not to be used when one wishes to take a small amount for a test or a hemoculture. The auricular veins and those of the limbs are invisible or inaccessible. The method used ordinarily is to cut the extremity of the tail. The consequent risks of contamination are great and this process, hardly bacteriologic, lacks nicety.

We have had recourse, during the last three years, to cardiac puncture, a commonplace and current custom of all laboratories with the rabbit and the guinea pig. It is very easy to use in the hog.

The animal is fixed upon its back, the limbs tied, the neck stretched out. We mark the points A: tracheal prolongation of the breastbone; B: xyphoid appendix. We mark the point, C, at equal distances from A and B, as near as possible to the left edge of the breastbone. This point falls into the third intercostal space. At this point the puncture is made with a long 15 to 20 gage needle, inclining the needle slightly toward the median plan. We sink the needle to a length proportional to the tail of the animal.

[10] Abstracted from an article by L. Balozet in C. R. Soc. de Biol., 95: 363-4, by M. C. Brown.

Report of "Field" Distemper Research

Most of our readers are more or less familiar with the canine distemper investigations that have been carried on for the past four years under the auspices of the English Medical Research Council at the council's farm laboratories at Mill Hill, near London, England.

It was at first estimated that three years would be required for the work and that it would cost £5,000 a year. However, on the advice of the editor of *The Field*, the goal for the fund was set at £25,000, nearly all of which has now been raised under the management of *The Field*.

Major G. W. Dunkin, M.R.C.V.S., was chosen veterinary representative of the council for this investigation and has had immediate charge of the research. Reporting on the progress to date, *The Field* recently said:

"The Technical Scientific Committee, after over four years' work by their investigators, are now definitely encouraged to believe that they are within sight of success. As the result of the work at the Research Station at Mill Hill, hounds, dogs and ferrets have, under experimental conditions, already been rendered immune against distemper.

"There remains the difficult problem of producing a reliable vaccine which can be made available for general use, and in order to concentrate on this and bring the work to an end, we ask for the small proportion of the £25,000, originally estimated to be the cost of the work, now remaining to be subscribed. We do not doubt that sportsmen all over the world will rally round

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us, and that the press too, will again help us in making known throughout the land the progress made with the work, and the financial effort still necessary to see it through."

Canine distemper is known all over the world and is found in all countries, where dogs exist. It is the best known and the most baffling disease of dogs. The raising, thus in a short time, of nearly $125,000 by voluntary subscription for research into the cause, prevention and treatment of this disease, is an indication of the dread with which owners of dogs regard its visitations.

Major Dunkin[11] has recently given some interesting conclusions arrived at as a result of the work at Mill Hill. According to him, all breeds of dogs and dogs of no particular breed, that is the pedigreed and the nondescript, are equally susceptible to distemper. No dog is naturally immune. The dogs and even puppies that one sees frequently, that have no history of having had the disease and yet fail to acquire it on exposure owe their immunity to simple uncomplicated attacks of the disease, that were so mild as to escape detection.

A description of the plant at Mill Hill and the methods used to exclude accidental infection have already been given in VETERINARY MEDICINE.[12] It was thought necessary to provide not only complete isolation for the animals at Mill Hill, but for the attendants also, and to breed and rear within the enclosure all dogs used in the experiment. The work was greatly facilitated by the discovery that ferrets are susceptible to the identical disease that affects dogs; and that in this animal, the disease runs a more uniform, acute and fatal course than in dogs.

Dunkin finds the first symptom of distemper to be a sharp rise in temperature up to 105 or 106 degrees F., occurring three to five days after infection, thus confirming the observations of Lockhart.[13] At this time, there may be some vomiting and perhaps a diarrhea and almost always a diminished appetite. The temperature and other symptoms subside after 24 to 48 hours, and in the simple uncomplicated disease, there is no further disturbance and the animal is thereafter immune to distemper.

This first stage of the disease is usually overlooked by the owner or if observed, not recognized as serious; if brought to the attention of a veterinarian, without a history of exposure he cannot more than suspect that the trouble is distemper. The disease is very infectious in the first stage.

Distemper is always a pure septicemia, the so-called nervous form, intestinal form, pulmonary form, etc., are just so many manifestations of complications that appear following the first stage of simple distemper.

One finding of the author is at variance with the generally accepted belief of veterinary practitioners, i.e., that canine distemper is air borne. He was unable to prevent the spread of the disease from infected to susceptible dogs kept in the same room regardless of precautions taken, while in no instance was the disease spread to animals at a distance of 300 yards even when infected and susceptible dogs were cared for by the same attendants after a rigid disinfection. Practicing veterinarians usually regard contact with an affected animal or contaminated material necessary for the spread of the disease and that if this be avoided, infected and susceptible animals may be kept in the same hospital without material danger to the latter.

On the subject of treatment, Major Dunkin says:

"The keen and observant owner is invariably an excellent nurse and generally this is the first essential. As to drugs, I believe there is no known drug which can honestly be said to be a cure for the disease, and I belong to that class of possibly misguided persons who believes that the correct medicinal treatment for distemper is to treat the symptoms as they appear.

"A careful bi-daily examination of the sick animal should be made, accompanied

[11] Canine Distemper, by Major G. W. Dunkin. *The Veterinary Record*, Vol. VII, No. 48, November 26, 1927, pp. 1035-40.

[12] A Veterinarian's Observations in Europe, by J. G. Horning. VETERINARY MEDICINE, Vol. 22, No. 5, May, 1927, pp. 203-8.

[13] Incubation Period of Dog Distemper, by Ashe Lockhart. VETERINARY MEDICINE, Vol. 22, No. 2, February, 1927, pp. 59.

by a record of temperatures at these visits. Absolute quiet I believe to be an essential, and I also think it inadvisable artificially to feed an animal while he is showing these acute symptoms for in my experience he will come to his food in the course of a couple of days unless the attack is going to be severe.

"The crowding of dogs in the kennel is, to my mind, a fatal procedure, for in the event of an outbreak occurring there will be a rapid passage of the infection from dog to dog at the optimum period, and, generally speaking, it is in kennels where crowding occurs that the worst attacks are observed. These conditions give every chance for secondary invaders, pneumococci, etc., to run riot in dogs already sickened by an acute infectious fever. That adequate disinfection of attendants is necessary is only too obvious, but when possible, I advocate separate attendants."

Canine Distemper

Since Carre worked it out in 1904, we know that distemper of dogs is caused by a filterable virus, that it is contagious, epizootic in livestock quarters, stables, etc., enzootic in cities, that it attacks dogs in their first year and especially attacks well-bred dogs.

Efficacious vaccination has been long sought and many vaccines and serums are to be had, few of them completely successful in practice either through difficulty in preservation of the vaccines and serums, through errors in diagnosis or incomprehension of the evolution of the disease.

LeBailly,[14] of the bacteriological Laboratory of Caen, reports an experiment in which the vaccination is made by a single, subcutaneous inoculation of virus sufficient to render the dog, in a few days, refractory to the infection. It is impossible to obtain the virus by means of a culture. I collect from the spleen which contains large quantities of the virus. The liver, the brain, the blood, give variable results. In other maladies caused by filterable viruses attempts at vaccination with emulsions of organs or tissues treated with formol have given inconstant results, with Curasson in cattle plague, with Carre, Vallee and Rinjard in foot-and-mouth disease. Staube has published, on the contrary, demonstrative cases of vaccination with such products against aviary plague.

In distemper, the virus, utilized living, in the natural state or attenuated, is difficult to dose; its use leads to failures.

Killed by chemical agents, it is easier to titrate. As a producer, we choose a dog which has reached the maximum of the thermic ascension which follows the infection. The animal is sacrificed by prolonged anesthesia with chloroform. Its spleen is ground up and emulsioned with physiologic water, one gram of the organ to 10 cc. of solution. The virus is killed by the addition of an antiseptic, preference being given to formol whose use has been recognized and made widely known by Ramon. The vaccinating emulsion is ready for use at the end of 48 hours and can be safely preserved in the refrigerator. Inoculated subcutaneously with the aid of a large needle in a dose of 10 cc. for each animal, it confers immunity in six days. Necessity in experimentation has forced me to place dogs vaccinated four days before in contact with controls in full infection; these animals developed a light feverish malady without external symptoms. In the total, I have vaccinated up to this time 19 susceptible dogs of 4-6 months which have resisted the inoculation of virus or direct contagion. Five controls have developed one death by paralysis, two cases of serious and prolonged distemper with keratitis and cachectic condition and two mild cases.

My three strains of virus collected in the Calvados and employed alone have acted identically. The experiments at control which this note cites will doubtless, as I hope, teach us whether the disease of distemper is the same everywhere or they will be useful in developing formulated polyvalent vaccines.

[14] Preventive and Specific Vaccination of Dogs for Distemper, by Charles Lebailley, *Rev. Gen. de Med. Vet.*, 1927. Abstracted by M. C. Brown.